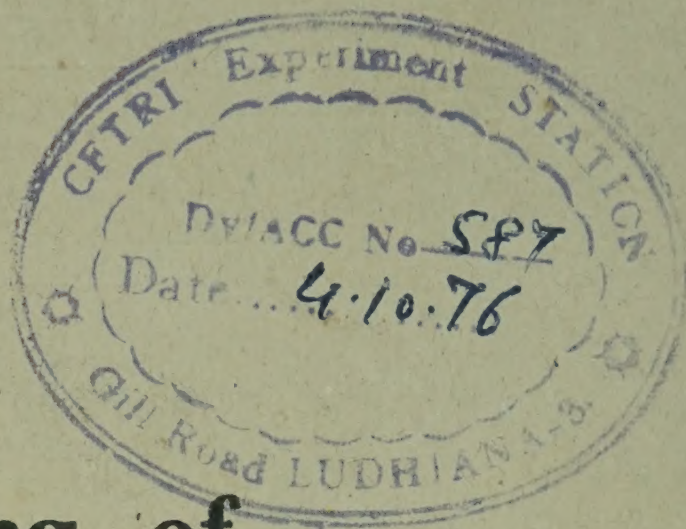


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Marketing of Turmeric in India



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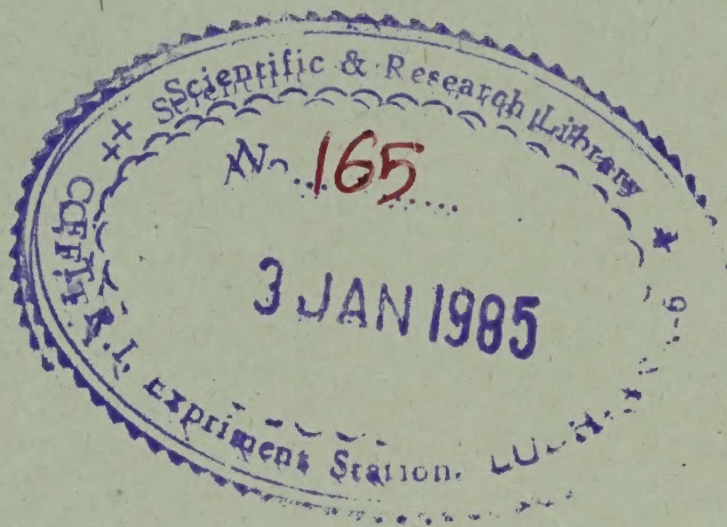
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Marketing of Turmeric in India



Directorate of Marketing & Inspection
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1965



PREFACE

In 1953, the Spices Enquiry Committee appointed by the Indian Council of Agricultural Research stressed the need for conducting a detailed survey on the production and marketing of turmeric in India. The Government of India accepted the recommendation and entrusted the work to the Directorate of Marketing and Inspection. The present report is the outcome of the marketing survey carried out by the Directorate during 1959-61. It represents also the first attempt to present an integrated picture of the production and marketing of turmeric in India.

Turmeric is one of the most important spices of India. It is not only used extensively by all classes of people in the preparation of tasty dishes, but is also regarded as something sacred for use in ceremonial and religious functions. Besides, it is one of our ancient and traditional items of export.

During the last decade, the trade in turmeric was beset with various problems. Supplies were erratic, exports were uncertain, prices were unstable and futures trading was in a state of unrest. Adulteration was on the increase and complaints regarding quality came from several consuming markets. Special efforts were, therefore, made during the survey to study these problems and suggest remedial measures.

It is hoped that the statistical data and other information and suggestions given in this report will be found useful.

Thanks and acknowledgements are due to the State Marketing Officers and a large number of growers, traders, exporters and other agencies in the trade but for whose co-operation and kind help, the publication of this report would not have been possible.

The report was compiled by Shri P. Ramaswamy, Marketing Officer, with the assistance of Shri N. V. Rangaswamy and Shri V. D. Patil, Inspectors, under the direction and guidance of Shri M. B. Nayar, B.Sc. (Agri.), M.Sc., Senior Marketing Officer, In-charge : Eastern Region.

The Government of India should not be regarded as assuming responsibility for any of the statements contained in this report.

NAGPUR;

The 18th of September, 1963.

N. P. CHATTERJI,

*Agricultural Marketing Adviser
to the Govt. of India.*

CONTENTS

	PAGE
PREFACE	(i)
INTRODUCTION	1
A. General	1
B. Note on Turmeric Cultivation	1
CHAPTER I—INDIAN SUPPLIES	5
A. Acreage	5
(1) General	5
(2) Distribution and trend	5
(3) Concentrated growing areas	7
Andhra Pradesh	7
Maharashtra	8
Orissa	8
Madras	8
Kerala	8
B. Yield per acre	9
C. Production	10
(1) Total quantity	10
(2) Trend	12
(3) Qualities and types	13
(4) Cultivation expenses and cost of production	16
D. Quantities retained by producers for different purposes	17
E. Seasons of marketing	18
F. Marketable surplus	20
G. Imports	21
H. Exports	21
(1) Trend of exports	22
(2) Periodicity	23
(3) Destinations	24
(4) Share of different ports	25
(5) Qualities and types exported	26
I. Total and net available supplies	26

	PAGE
CHAPTER II—UTILISATION AND DEMAND	28
A. Utilisation	28
B. Demand	29
(1) Total demand	29
(2) Qualitative	30
(a) Seed purpose	30
(b) Condiments	30
(c) Cosmetics	30
(d) Dye	30
(e) Exports	31
(3) Factors affecting the demand	33
C. Inter-State Trade	34
D. Per capita consumption	36
CHAPTER III—PRICES	37
A. Units of price quotation	37
B. Trend of prices	38
C. Comparison of prices in assembling and distributing markets	40
D. Variation in prices due to quality in different markets	41
E. Variation in prices due to quality in the same market	42
F. Comparison of prices of 'bulbs' and 'fingers'	43
G. Seasonal variations	44
H. Comparison of wholesale and retail prices	47
I. Futures prices	49
(1) Tendering differences	51
(2) Regulation of futures prices	52
J. Factors influencing prices	53
K. Market intelligence	54
CHAPTER IV—PREPARATION FOR THE MARKET	56
A. Harvesting	56
(1) Seasons	56
(2) Methods	56
(3) Costs	57
B. Curing and processing	57
(1) Cleaning	57
(2) Boiling	57
(3) Drying	60

	PAGE
(4) Sorting	60
(5) Polishing	61
(6) Colouring	64
(7) Costs	64
C. Grading and standardisation	65
(1) Present method of commercial classification and grading	65
(2) Suggestions for grading and standardisation	67
D. Methods of packing	68
CHAPTER V—METHODS OF MARKETING	70
A. Assembling	70
(1) Quantities sold in villages	70
(2) System of sale in villages	71
(3) Sales in assembling markets	72
(a) Quantities assembled	72
(b) Share of different agencies	73
(c) Buyers in the assembling markets and their share	74
(d) List of markets, their organisation and control	75
(i) Andhra Pradesh	75
(ii) Maharashtra	75
(iii) Orissa	75
(iv) Madras	76
(v) Kerala	76
(e) Assembling Agencies	76
(i) Wholesale merchants and commission agents	76
(ii) Co-operative societies	77
Maharashtra	77
Orissa	78
Madras	78
(iii) Market functionaries	80
Brokers	80
Weighmen	80
Hamals	80
(f) Systems of sale	80
(i) Open auction	80
(ii) Open agreement system	81
(g) Market charges	81
(h) Cost of assembling	83
B. Distribution	83
(1) Agencies and methods	83
(a) Merchants at assembling markets	83
(b) Exporters	84

	PAGE
(c) Forwarding agents	85
(d) Wholesale merchants at distributing and consuming markets .	85
(e) Retailers	85
(2) Cost of distribution	86
C. A note on the marketing of manufactured products	86
(1) Turmeric powder	87
(2) Curry powder	88
D. Finance	89
Village merchants	89
Commission agents	90
Merchants at assembling markets	90
Co-operatives	90
Banks	91
Shroffs	91
E. Futures trade in turmeric	91
(1) History of futures trade in turmeric	91
(2) Regulation of futures trade in turmeric	92
(3) Working of the Spices and Oil Seed Exchange Limited, Sangli .	93
F. Storage	95
(1) In villages	95
(2) In assembling markets	95
(3) In distribution and consuming markets	98
G. Transportation	98
(1) Road-ways	98
(a) Head loads	98
(b) Bullock carts	98
(c) By lorries	99
(2) Railways	100
(3) Waterways]	101
(a) Country boats	101
(b) Steamers	102
H. Adulteration	102
CHAPTER VI—MARKETING COSTS AND MARGINS	104
A. General	104
B. Marketing costs	104
(1) Assembling charges	104
(2) Transport	104
(3) Distribution costs	105

	PAGE
(4) Total marketing costs	105
C. Producer's share	106
D. Margins of intermediaries	107
(1) Merchants at assembling markets	107
(2) Wholesale merchants at distributing markets	107
(3) Retailers at consuming markets	108
(4) Total margins	108
E. Comparison of costs and margins by States	108
SUMMARY AND CONCLUSIONS	111
RECOMMENDATIONS	128

LIST OF APPENDICES

	PAGE
I. Area under turmeric in different States in India during 1956-57 to 1960-61	135
II. Estimated area under turmeric and its production in concentrated growing areas in important producing States in India during 1960-61	136
III. Average yield per acre of turmeric in different States in India during the period from 1956-57 to 1960-61	138
IV. Estimated production of turmeric in different States in India during 1956-57 to 1960-61	139
V. Estimated production of turmeric bulbs and fingers in different States in India during 1960-61	140
VI. Estimated cost of cultivation per acre and cost of production per maund of turmeric in the major producing States in India (Average of 1958-59 to 1960-61)	141
VII. Estimated quantities of turmeric retained by the growers for various purposes in different States in India	142
VIII. Monthly arrivals of turmeric in certain important assembling centres expressed as percentages of total annual arrivals (Average of 1958 to 1960)	143
IX. Estimated marketable surplus of turmeric in the important producing States in India during 1956-57 to 1960-61	144
X. Periodicity of exports of turmeric from India during 1947-48 to 1960-61	146
XI. Quantity and value of exports of turmeric from India to different destinations during the period from 1947-48 to 1960-61	148
XII. Estimated total and net available supplies of turmeric in India during 1956-57 to 1960-61	151
XIII. Estimated demand for various commercial qualities of turmeric in India during 1960-61	152
XIV. Estimated quantities of turmeric available for consumption in different States in India during 1960-61	153
XV. Average monthly wholesale prices of turmeric in important assembling centres in India	154
XVI. Average monthly wholesale prices of turmeric in important distributing centres in India	162
XVII. Average monthly spot prices of turmeric (Madras Finger quality) at London during the period from 1951-52 to 1960-61	168
XVIII. Comparison of annual wholesale prices of turmeric in assembling and distributing markets (1956-57 to 1960-61)	169
XIX. Comparison of spot and futures prices of turmeric at Sangli market (October 1957 to September 1961)	171

	PAGE
XX. Rates of ordinary and special margins of deposit payable by members dealing in Forward Contract for turmeric during the seasons Samvat Years 2014 to 2016	174
XXI. Results of analysis of commercial samples of turmeric fingers, bulbs (unpolished and polished) and powder	176
XXII. Range of variation in the quality characteristics of commercial samples of turmeric analysed	180
XXIII. Provisional standard grades and grade designation marks and definition of quality for Indian turmeric	181
XXIV. Percentage of marketable surplus of turmeric sold in the villages and that taken to assembling markets for sale by growers in different producing areas (1960-61)	184
XXV. List of important assembling markets for turmeric in India and the quantities handled (1960-61)	185
XXVI. Market charges payable by sellers and buyers in important assembling markets in India (1960-61)	186
XXVII. Comparison of market charges payable by sellers and buyers for Rs. 100 worth of turmeric in selected assembling markets in India (1960-61)	189
XXVIII. Comparison of the volume of transaction in different Forward Contracts in turmeric and the quantities actually delivered against each of them during the years 1957-58 (S.Y. 2014) to 1959-60 (S.Y. 2016)	192
XXIX. Quantities of different qualities of turmeric delivered against different contracts during the years 1956-57 (S.Y. 2013) to 1959-60 (S.Y. 2016)	193
XXX. Typical examples of price-spread in the marketing of turmeric	194
XXXI. Typical examples of price-spread in the export of turmeric	218
XXXII. Analysis of costs and margins in the marketing of turmeric	223
XXXIII. Analysis of costs and margins in the exports of turmeric	227
XXXIV. Average costs and margins in the marketing of turmeric and average net return to the producers in different States in India (1960-61)	228

INTRODUCTION

A. General

Turmeric is known to the world as a condiment from time immemorial. Persians and Arabians knew this product as “Al Hard” and “Al Kurkum” as early as the tenth century A.D. The *Aini-i-Akbari*—the Laws of Akbar—published in 1590 A.D. gives prices of different qualities of turmeric indicating thereby the commercial importance of turmeric in those days.

The turmeric plant, *Curcuma*, is considered to be a native of India, but according to Watts, it may be of Chinese or Cochin-Chinese origin. It is, however, essentially a crop of the tropics, its cultivation extending from India to Indo-China, East Indies, portion of China and Ceylon. It is believed that turmeric derived its name from the French term “terre merite” which was perhaps derived from the Arabic word “Curcuma”, which again probably originated from the Sanskrit word “Kumkumum”.

In India, turmeric is one of the most important cash crops and accounts for 6 per cent of the total area under spices and condiments. The main turmeric growing areas are distributed in the States of Andhra Pradesh, Maharashtra, Orissa, Madras and Kerala. Botanically, turmeric belongs to the natural order *Scitaminae*, family *Zingiberaceae* and genus *Curcuma*. Under the genus *Curcuma*, nearly thirty species have been recognised by the botanists, but *Curcuma longa*, Linn. is economically the most important among them and is extensively cultivated in India. Another species, *Curcuma aromatica*, is also grown for commercial purposes but the area under its cultivation is relatively small. The cured and processed rhizomes—the swollen underground stems of this plant—constitute the turmeric of commerce. The crop cultivated in India consists mostly (96·4 per cent) of the plant *Curcuma longa*, Linn. and hardly 3,500 acres or 3·6 per cent of the total sown area is cultivated under the aromatic variety *Curcuma aromatica* which is grown mainly in small areas in East and West Godavari districts of Andhra Pradesh and Tanjavoor and South Arcot districts of Madras State.

“Haldi” (Hindi), “haldi” (Oriya), “pasupu” (Telugu) and “manjal” (Malayalam and Tamil) are the various names by which turmeric is known in the country.

By far the largest quantity of turmeric produced in India is utilised as a condiment. To a small extent it is also used for medicinal purposes and as a source of dye for colouring textile fabrics. Turmeric is considered highly auspicious by the Hindus and is given a place of honour in all their religious ceremonies. Its use as a principal cosmetic by Indian women, particularly in the South, is well known from time immemorial.

B. Note on Turmeric Cultivation

The turmeric crop is propagated vegetatively by means of rhizomes and generally takes 8 to 9 months to mature.

The crop is grown under irrigation and monsoon rains supplemented by one or two irrigations. In localities having a rainfall of 50" to 90", turmeric is grown purely as a rainfed crop during the south-west monsoon season. The crop can be raised on elevations ranging from sea level to an altitude of 4000, feet. In high level wet lands having natural drainage facilities, turmeric is grown as an irrigated crop. Among the important producing States, Andhra Pradesh, Maharashtra and Madras raise turmeric as an irrigated crop, while Orissa and many parts of Kerala grow it as a rainfed crop. The turmeric crop is very sensitive to atmospheric temperature and its growth stops as soon as the maximum temperature drops below 70°F.

The soils most suited for turmeric cultivation are rich red loams having natural drainage facilities. Turmeric is also cultivated in soils of other types such as the stiff black clay loams of Guntur and Krishna districts in Andhra Pradesh, the heavy black soils of Karur in Madras State, and even the comparatively poor red laterite soils of Malabar and other parts of Kerala State.

Turmeric being an exhausting crop is not generally cultivated on the same land year after year but is rotated with chillies, cotton, ragi, paddy and vegetables in different States. In Orissa, the crop is grown on the same land only after an interval of seven years. After raising a crop of turmeric 'kunda' paddy or niger is grown on the same land during the second year and 'Kuari' or niger during the third year. Thereafter, the land is left fallow for four years before another crop of turmeric is raised.

Turmeric is generally grown as a pure crop. Mixed sowings are, however, common in some States. In Madras State and in Telengana regions of Andhra Pradesh, "cumbu", "ragi", maize, chillies and onions, etc., are interplanted in turmeric gardens and a subsidiary crop is raised during the early stages of growth of the turmeric crop. Castor is also sown thinly to provide to the turmeric plants shade and protection from the sun.

Turmeric requires a well prepared bed, and preparation of the soil usually starts either immediately after the harvest of the preceding crop or with the onset of early rains. The number of ploughings given varies from 2 to 16 but the common practice is to give 6 ploughings with a country plough. When turmeric is cultivated on hill summits or hill slopes, as in Orissa, the scrub and jungle growth are cleared and burnt down and the resulting ash is used as manure for the land. Five to six ploughings are required to break the surface upto a depth of about 9". Temporary rivetments or ridges are made to prevent soil erosion.

Planting takes place in the months of May to August in Andhra Pradesh and Madras and from the first to the third week of June in Maharashtra. The planting material used consists of the rhizomes obtained from the previous crop. These are of two types, viz., bulbs and fingers. The central corm, round or ovoid in shape and big in size, developing from the base of the turmeric plant, is called "bulb" or "round" and is also referred to as "mother rhizome". The numerous, long, palmate branch rhizomes, developing from the mother



A well cultivated field of turmeric in Orissa.

rhizome, are called "fingers" or "daughter rhizomes". After harvest, healthy and well developed bulbs and fingers, as required, are selected and kept loosely heaped over sand in a cool place under shade. The heap is covered with dry turmeric leaves. The heap is left undisturbed and the rhizomes are stored in that condition till the next sowing. In some places, the heaps are also plastered with mud and cowdung. In some areas of Madras State, disease-free crop grown in certain healthy patches is set apart for seed. In such cases the rhizomes are harvested only after the plants dry up completely which is generally a month later than the harvesting of the rest of the crop. The rhizomes so harvested contain less moisture and keep better during storage. Nearly one-tenth of an acre is usually set apart to provide seed material for one acre.

In Guntur and Krishna districts of Andhra Pradesh, where bulbs are used for planting purposes, each bulb is split vertically into two pieces and each half containing at least one fully developed bud is planted. In Cuddapah, fingers are used as seed material; long fingers, if any, are broken into two pieces before planting. In Madras, both bulbs and fingers are used as seed; but both types are planted separately. In Orissa also, both bulbs and fingers are used as seed material but when bulbs are used, the crop is harvested in the same year whereas when fingers are planted, the crop is allowed to remain in the field for two seasons.

The seed rate used under irrigated conditions varies from 1,400 lbs. to 2,000 lbs. in Madras, Andhra Pradesh and Maharashtra States. In Andhra Pradesh, however, a higher seed rate of 2,000 to 2,500 lbs. is also reported. Under rainfed conditions, as in Orissa and Kerala, lower seed rates are used, *viz.*, 1,600 lbs. and 800 lbs. respectively.

Turmeric is planted 2 inches deep in the soil on flat beds or ridges. Spacing usually allowed between the rows is 18 inches and that between plants in each row 12 inches. The method of planting, however, varies widely. In Madras State, the planting is done both on ridges 1½ to 2 feet apart and in beds. Turmeric is planted either on the crest or on both sides of the ridges. In Andhra Pradesh, sowing behind the country plough and formation of beds after sowing are more common. In Orissa, the rhizomes are dibbled behind the plough. In Bombay, broad ridges 3 feet wide are alternated with narrow irrigation channels, and each ridge contains 3 rows or plants. Intercultivation consists of a few hoeings and weedings at intervals of 1 to 1½ months after planting.

Turmeric being an exhausting crop requires heavy manuring. The manurial practices vary from tract to tract. In Guntur and Krishna districts of Andhra Pradesh, 30 cart-loads of silt and 30 to 40 cart-loads of farm yard manure per acre are applied before sowing. Penning of cattle and sheep in turmeric field is also done in Cuddapah district. In addition to the basic dose, top dressing of groundnut oilcake at 12 to 16 maunds per acre is applied in two doses. In Madras State, a basic dose of farm yard manure at the rate of 20 to 30 cart-loads and silt at 25 to 30 cart-loads is applied at the time of preparation of land. Sheep penning at 5,000 to 6,000 heads per acre is also common in some areas. Some cultivators also apply groundnut or castor oilcake up to 1,500 lbs. per acre as a top dressing.

As the crop responds well to heavy manuring, use of fertilisers and fertiliser mixtures, as supplementary manures, is also becoming increasingly popular in the important producing States. In Orissa, immediately after the rhizomes are planted, the land is covered with "sal" leaves at 6,000 to 8,000 lbs. per acre. No further manuring is generally done thereafter.

In Madras and Andhra Pradesh, bulk of the area under turmeric is irrigated from canals and tanks. In garden lands, well irrigation is the practice. The number of irrigations required for raising the crop varies according to the nature of the soil. The stiff clay soils of Guntur and Krishna districts of Andhra Pradesh require 15 to 20 irrigations in all, while 40 to 45 irrigations are necessary for other types of soil.

The rhizomes start sprouting in about a month's time. The vegetative growth is rapid during the first four months, not more than three secondary shoots generally appearing on each plant. The development of rhizomes takes place after the vegetative growth and rhizomes mature during the cold months. The rhizomes are formed within the first 6" to 7" of the surface of the soil.

The crop gets ready for harvest in about 8 to 9 months after planting. The maturity of the crop is indicated by the drying of the stems and leaves. Main harvesting season begins from February and continues up to April. The stems are cut flush to the ground. In order to facilitate the harvesting of the underground rhizomes, it is done either after a good rainfall or after applying light irrigation. The rhizomes are dug up by special hoes or by country ploughs. After collection, the rhizomes are cleaned and washed, and the sticking roots removed. The fingers and bulbs are then separated. The yield of fresh rhizomes varies from $1\frac{1}{2}$ to 3 lbs. per plant, though in some cases it may be as high as 6 lbs. The average number of fingers per plant ranges between 8 and 12, although occasionally some vigorous plants produce as many as 40 fingers. The proportion of bulbs and fingers varies from State to State but has been generally found to be 1:4. The yield of fresh raw turmeric varies from 15,000 lbs. to 20,000 lbs. per acre in the case of irrigated crop and 6,000 to 8,000 lbs. under rainfed conditions. The raw produce is cured and processed before it is marketed and the average ratio of the cured product to the raw harvested crop is 1:4.

CHAPTER I

INDIAN SUPPLIES

A. Acreage

(1) GENERAL

Among the turmeric growing countries of the world, India is among the few which maintain some reliable estimates of area and yield of this crop. Although all-India crop forecasts are not published by the Directorate of Economics and Statistics, as in the case of other major agricultural crops, most of the turmeric growing States in the country maintain regular statistics of the annual acreage sown under this crop and publish the same in their 'Season and Crop' reports. The data are also supplied to the Directorate of Economics and Statistics of Government of India in the Ministry of Food and Agriculture (Department of Agriculture) who utilise the same for preparing all-India ad-hoc estimates of the area sown and the yield of the crop. Till the time of the present survey the all-India ad-hoc estimates had been compiled only upto 1958-59.

During the present survey, therefore, detailed enquiries were made in each of the producing States not only to verify the ad-hoc estimates but also to collect adequate information for making estimates of area and yield for the years 1959-60 and 1960-61. The enquiries made have generally shown that the statistics relating to acreage and yield maintained by the States and the ad-hoc estimates made by the Directorate of Economics and Statistics can be considered to be fairly reliable.

(2) DISTRIBUTION AND TREND

The total estimated area under turmeric cultivation in India and its distribution in the different producing States during the years 1956-57 to 1960-61 are given in Appendix I. The distribution of area in various States during the years 1958-59 and 1960-61 is shown in the table below :

TABLE 1

Total area under turmeric and its distribution in different States in India

(Area in '000 acers)

Sl. No.	States	1958-59		1960-61	
		Area	Percentage	Area	Percentage
1.	Andhra Pradesh	27.8	28.5	30.3	31.1
2.	Maharashtra	22.3	22.8	18.6	19.1
3.	Orissa	18.6	19.1	20.3	20.9
4.	Kerala	10.6	10.9	9.9	10.2
5.	Madras	9.3	9.5	9.2	9.5
6.	Others	9.0	9.2	9.0	9.2
TOTAL		97.6 (39.5)	100.0	97.3 (39.4)	100.0

(Figures in brackets in '000 hectares.)

It will be seen from the above table that the total area under turmeric crop in India was of the order of 97,600 acres in 1958-59 and 97,300 acres in 1960-61. It will also be seen that the cultivation of this crop is localised in five States of which Andhra Pradesh, Maharashtra and Orissa are most important, followed by Kerala and Madras. More than 90 per cent of the total area is distributed in these five States and the remaining is distributed in small areas in Mysore and in the north-eastern States of Bihar, West Bengal, Assam and Tripura.

Andhra Pradesh came first with a total area of 27,800 acres in 1958-59 and 30,300 acres in 1960-61. Maharashtra and Orissa came second and third with 22,300 acres and 18,600 acres respectively during 1958-59 but their position appears to have changed during 1960-61. According to the present survey, the turmeric area in Orissa has gone up to 20,300 acres while it has decreased in Maharashtra to 18,600 acres. These three States together constituted 70.4 per cent of the turmeric crop in India during 1958-59 and 71.1 per cent in 1960-61.

Kerala and Madras were the next important growing States with 10,600 acres and 9,300 acres respectively in 1958-59 and 9,900 acres and 9,200 acres respectively during 1960-61. The share of these two States together accounted for 20.4 per cent during 1958-59 and 19.7 per cent during 1960-61.

The share of the other States is negligible and was of the order of only 9.2 per cent both in 1958-59 and 1960-61. The total area in the different States during 1960-61, and the distribution of the crop in the different regions have been estimated and are given in Appendix II.

Depending upon the type of soil and climate and the methods of cultivation, curing and processing, the crop grown in each of these regions is said to develop some special characteristics.

The total area under turmeric cultivation has been steadily declining in India during the last decade. This may be seen from the graph facing this page and the table given below :

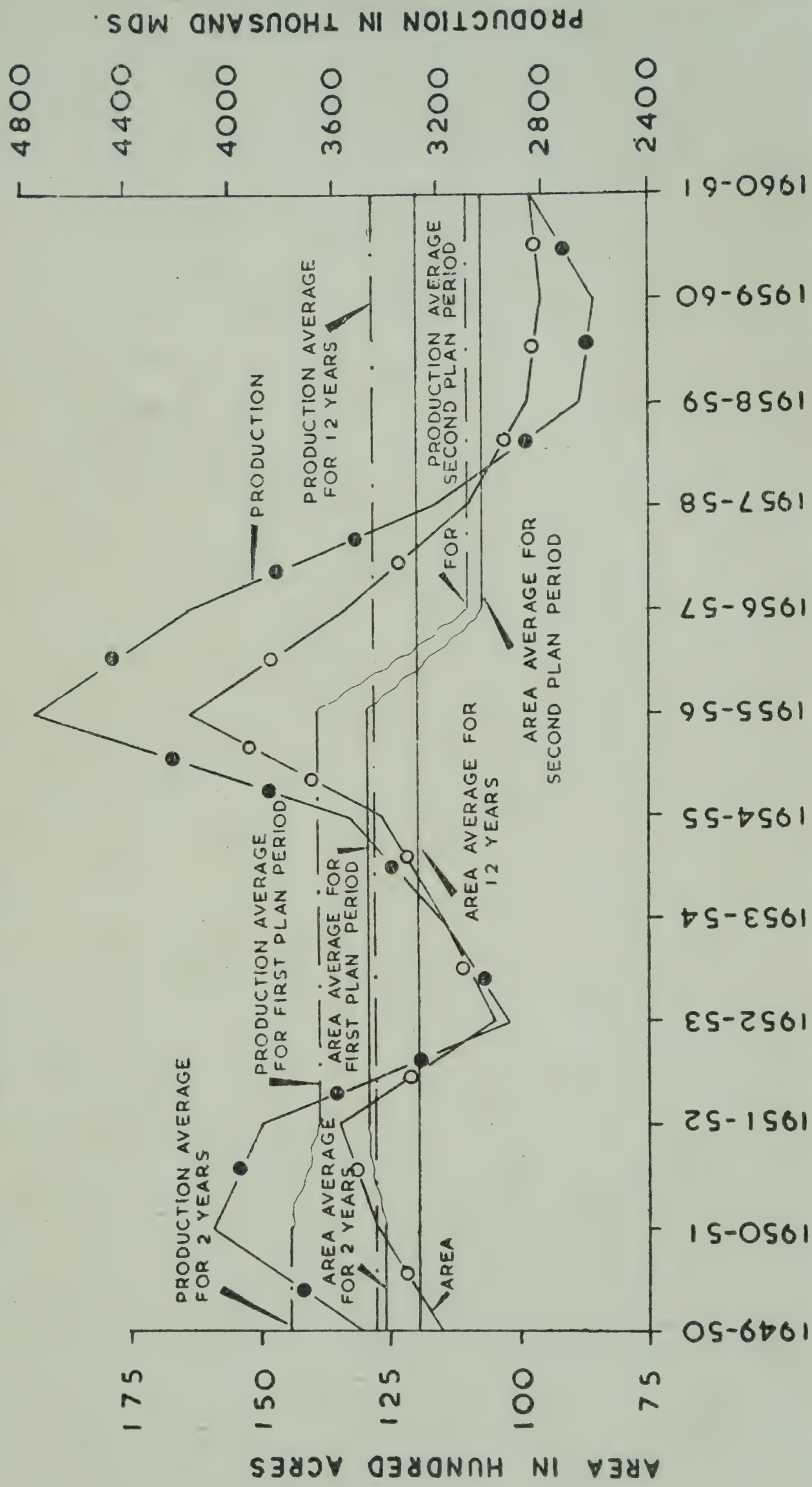
TABLE 2

Trend of acreage under turmeric in India during the years 1951-52 to 1960-61

Year	Area in '000 acres
1951-52	134.6
1952-53	104.6
1953-54	114.2
1954-55	125.9
1955-56	162.9
Average for First Plan period	128.4 (52.0)
1956-57	133.1
1957-58	109.4
1958-59	97.6
1959-60	95.0
1960-61	97.3
Average for Second Plan period	106.5 (43.1)

(Figures in brackets in '000 hectares.)

TREND OF ACREAGE AND PRODUCTION OF TURMERIC IN INDIA.



During 1951-52, the first year of the First Five Year Plan, the area under turmeric crop in India amounted to 1.35 lakh acres. This was followed by a downward trend which continued till 1954-55 though with a slight improvement. This was due to the uneconomic prices that prevailed for turmeric during these years and switching over by the cultivators to other crops like paddy, sugarcane, etc. The reduction in area, over a continuous period of three years, brought about an acute short supply of this commodity which in consequence pushed up the price to an unprecedented high level and a phenomenal increase in the acreage under this crop during 1955-56, the last year of the First Plan period. An all-time record of 1.63 lakh acres was reached during this year. This increase in acreage, however, could not last long and the beginning of the Second Plan period saw its decline. The declining trend continued during the following four years and the area reached the lowest level of 0.95 lakh acres during 1959-60. It was noticed during the present survey that there was a slight increase in the acreage during 1960-61 and the area under turmeric during this year has been estimated at 97,300 acres. As compared with the average annual acreage of the First Plan period, the average annual acreage during the Second Plan period was less by about 22,000 acres.

(3) CONCENTRATED GROWING AREAS

The total average annual acreage under turmeric during the triennium ending 1960-61 is estimated at 0.97 lakh acres. The five States of Andhra Pradesh, Maharashtra, Orissa, Kerala and Madras together account for 90.8% of the total area under turmeric in India and the remaining 9.2% is shared by all the other States. By and large, the average area cultivated under turmeric in a holding varies from half to one acre.

Concentrated areas under turmeric cultivation in the five important producing States in India with acreages sown in 1960-61 are shown in Appendix II.

Andhra Pradesh.—As will be observed from Appendix II, turmeric cultivation in Andhra Pradesh is localised in five distinct regions, viz., (i) Duggirala, (ii) Cuddapah, (iii) Nizamabad, (iv) Godavari delta, and (v) Agency tract. Duggirala region, comprising part of Guntur and Krishna districts, is the most important and accounts for 38.3 per cent of the total crop of this State. In the Guntur district its cultivation is confined to Tenali taluk and parts of Guntur taluk and in the Krishna district, the concentrated growing areas are located in Ganavaram and Vijayawada taluks.

The second important growing region accounting for 21.6 per cent of the total area in 1960-61 is Cuddapah. It comprises mainly Cuddapah district and parts of other districts of Rayalaseema. In Cuddapah district, the taluks of Rajempet, Cuddapah, Proddatur and Sidhout are important growing areas and the locally famous "Tekurpet quality" is grown in Badvel taluk of this district.

Next in importance is the Nizamabad region which accounted for 20.7 per cent of the total area sown during 1960-61 in the State. Armoor taluk in Nizamabad district is the most important.

The fourth region which accounted for 13·8 per cent of turmeric area of the State is composed of the twin districts of East and West Godavari. Kothapettah taluk of East Godavari district and Malleswaram-Siddhantam area of West Godavari district are the most important areas for its cultivation.

The fifth region comprising parts of Srikakulam district accounts for 5·6 per cent of the crop and is not so important for turmeric cultivation in this State.

Maharashtra.—Turmeric cultivation in Maharashtra State is concentrated in the Sangli region which accounts for 50·6 per cent of the total area sown under this crop in this State. This region comprises Tasgaon, Khanapur, Miraj and Walva taluks of Sangli district and Hatakangle taluk of Kolhapur district. The other important growing areas are located round about Satara and in Marathwada region. In the former region it is grown in Karad and Patan taluks of Satara district and parts of Poona and Ratnagiri districts. In Marathwada it is grown in Parbhani district and parts of Nanded, Sholapur and Osmanabad districts. These regions account for 21·2% and 18·7% respectively of the total sown area in this State. The remaining 9·5% of the area under the crop in this State is in Chanda district and parts of Nagpur, Amraoti and Wardha districts of Vidarbha.

Orissa.—The cultivation of turmeric in Orissa State is concentrated mostly in the two agency tracts of Khond and Koraput which account for 55·7% and 39·7% respectively of the total area under the crop in the State. The Khond agency tract includes Tikabali, Raika, Udaigiri and Balliguda areas of Balliguda sub-division and Khajuripada, Firingia and Katringia areas of Phulbani sub-division of Boudh-Phulbani district. Umarkot, Jeypore and Laxmipur areas of Koraput district are important growing areas in the Koraput agency tract of this State. Turmeric is also cultivated to a smaller extent in the tribal districts of Ganjam and Denkanal of Savara agency tract. This region accounts for 3·2% of the total sown area. Only a very small area—1·4% of the total—is cultivated in the plains.

Madras.—In Madras State, cultivation of turmeric is concentrated in Gobichettipalayam, Erode and Bhavani taluks of Coimbatore district where the well drained alluvial soils irrigated by the Bhavani and Amaravathi rivers, suitable for successful cultivation of this crop, are found. These taluks account for 55·3 per cent of the total area sown under turmeric in the State. The crop is also cultivated in Salem taluk of Salem district which accounts for 15·7 per cent of the total area. Karur, Atthur and Kodumudi taluks in Tiruchirapalli district and Kallakurichi and Chidambaram taluks of South Arcot district are also important for turmeric cultivation. These two tracts account for 9·1% and 8% respectively of the total area under the crop in this State.

Kerala.—In Kerala State, bulk of the turmeric crop (65·2 per cent of the total area under turmeric in this State) is grown in the Malabar region, comprising Ernad, Palghat and Walluvanad. The Cochin and Travancore region accounts for the remaining 34·8 per cent. Ernakulam and Kottayam districts are important turmeric growing areas in this region.

B. Yield Per Acre

As in the case of other agricultural crops, the yield of turmeric per acre is influenced by a variety of factors; soil and climatic conditions, irrigation and manuring practices, however, have the maximum influence on the crop yield. The effect of various agronomical practices on the yield of turmeric has not been studied but it is commonly known that well drained, rich red loamy soils, when properly tilled and irrigated, give comparatively high yields of anything from 16,000 to 18,000 lbs. of green turmeric per acre, while under rainfed conditions, as in Orissa, the yields are much less, being about 6,000 to 8,000 lbs. only. Higher yields are also recorded where the crop is heavily manured.

Two views are prevalent in respect of the use of bulbs and fingers as seed material. Some believe that there is no advantage in using whole or cut bulbs as seed material over fingers. But the experiments conducted on the Agricultural College Farm, Poona, have shown that by using bulbs as seed material the yield can be increased by nearly half. It is also on record that turmeric when planted on broad ridges gives 10 per cent more yield than when planted on narrow ridges and about 65 per cent more than when bed method of planting is resorted to. These results clearly indicate that there is scope for increasing the outturn of the turmeric crop by improving local agronomical practices.

Since the ratio of the raw and fresh rhizomes to the cured product varies from tract to tract, for the purpose of comparing the average yields obtained in various growing States, yield of cured and processed turmeric has been taken. In this report, therefore, quantities referred to are in terms of the cured products unless otherwise stated.

In Appendix III yields for the years 1956-57 to 1960-61 have been shown and these are summarised in Table 3.

TABLE 3

Average per acre yield of cured turmeric in important producing States in India

(1956-57 to 1960-61)

Sl. No.	States	Yield per acre (lb.)
1. Madras*	3,138
2. Maharashtra*	3,137
3. Andhra Pradesh*	2,736
4. Orissa	1,547
5. Kerala	884
6. Other States	2,596
	ALL-INDIA AVERAGE	2,376

*In these States the crop is grown under irrigation.

It may be observed from Table 3 that the average per acre yield of turmeric obtained in the States of Madras, Maharashtra and Andhra Pradesh, where the crop is raised as irrigated crop, is higher than that obtained in Orissa and Kerala where the crop is grown under rainfed conditions.

Within each State, the average yields vary from tract to tract depending upon the nature of soil, climate and agronomic practices. In Andhra Pradesh, for example, average yields varying between 4,000 and 5,000 lbs. have been recorded in Duggirala and Cuddapah areas while in West Godavari and Telangana areas yields varying between 2,000 to 2,500 lbs. have been recorded. Likewise, in Madras State very high yields—as much as 6,000 lbs. per acre—have been reported from Velliampalayam area in Coimbatore district as against 2,000 to 2,500 lbs. obtained in Karur area of Tiruchirapalli district.

C. Production

(1) TOTAL QUANTITY

No systematic attempt has been made in any of the major producing States to determine the standard yield based on crop cutting experiments in different growing areas. In the absence of these data the usual formula, *viz.*, area × standard yield × seasonal condition factor could not be applied for estimating the total production of this crop. The figures of production in this report represent estimated quantities calculated on the basis of average yields and arrivals in assembling markets.

The total production of turmeric in India and its distribution in different States during the years 1956-57 to 1960-61 are given in Appendix IV and the data for 1958-1959 and 1960-61 are given in the following table :

TABLE 4

Total production of turmeric and its distribution in different States in India

(Quantity in '000 maunds)

States	1958-59		1960-61	
	Quantity ('000 mds.)	Per- centage	Quantity ('000 mds.)	Per- centage
Andhra Pradesh	840.6	31.7	1,123.7	39.6
Maharashtra	819.5	30.9	702.5	24.8
Orissa	349.8	13.2	381.9	13.5
Madras	350.4	13.2	342.0	12.0
Kerala	103.0	3.9	95.8	3.4
Others	189.5	7.1	189.5	6.7
TOTAL INDIA	2,652.8 (990.1)	100.0	2,835.4 (1058.3)	100.0

N.B.—Figures in brackets indicate quantity in '000 quintals.

SHARE OF DIFFERENT STATES IN ACREAGE AND PRODUCTION OF TURMERIC IN INDIA.

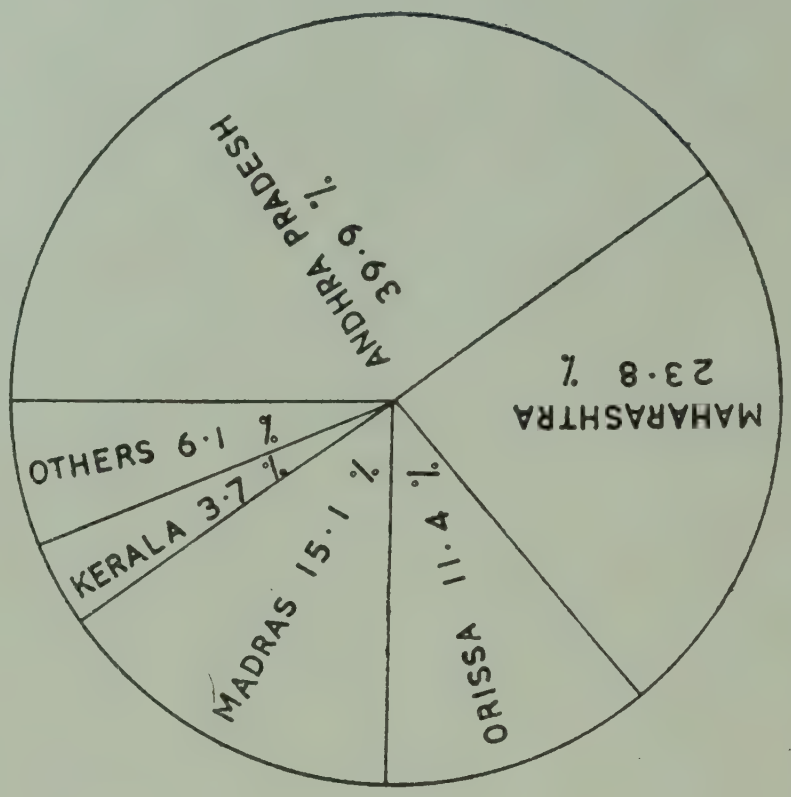
(AVERAGE OF 1956-57 TO 1960-61)

AREA



TOTAL AREA = 43088 HECTARES

PRODUCTION



TOTAL PRODUCTION = 1.54 LAKH QUINTALS

The average total annual production in India has been estimated at 28.35 lakh maunds during the year 1960-61. As in the case of area, the principal States in order of importance are Andhra Pradesh, Maharashtra, Orissa, Madras and Kerala. By far the largest quantities of turmeric are produced in the two States of Andhra Pradesh and Maharashtra which together accounted for 18.3 lakh maunds or 64.4 per cent of the total production in India during the year 1960-61. Orissa and Madras came next in importance with a total production of 7.24 lakh maunds representing 25.5 per cent of the total crop. Turmeric production is comparatively small in Kerala and amounted to 95,800 maunds representing 3.4 per cent of the total quantity produced in India during the year 1960-61. The production in other States comprising mostly the north-eastern regions of India is comparatively small.

The share of different States in the total acreage and production is illustrated in the diagram facing page 11. It will be seen that Andhra Pradesh and Maharashtra occupy the same place of importance both in acreage and production. The position in respect of Orissa and Kerala is somewhat different. Orissa, which accounts for 20.9 per cent of the total area under the crop, contributes only 13.5 per cent of the total production. Similarly, Kerala which accounts for 10.2 per cent of the total area contributes only 3.4 per cent of the total production. This is because of the comparatively poor yield per acre obtained in these two States as compared with the States of Andhra Pradesh, Maharashtra and Madras.

In Andhra Pradesh, the Duggirala area is the largest turmeric producing centre. This area produces nearly 4.4 lakh maunds out of the total production of 11.24 lakh maunds in the State. The next major centre is Cuddapah which accounts for 3.4 lakh maunds of the total production of 11.24 lakh maunds in the State.

In Maharashtra, Sangli and Satara regions are the most important producing centres accounting for 5.9 lakh maunds of the produce out of the total production of 7.0 lakh maunds.

In Orissa, the production of turmeric is almost confined to the two tribal districts of Koraput and Boudh-Phulbani. These two districts produce as much as 3.6 lakh maunds out of the total production of 3.8 lakh maunds.

In Madras, the principal turmeric producing centres are found in the two districts of Coimbatore and Salem which together account for 2.5 lakh maunds out of the total production of 3.4 lakh maunds in the State. Tiruchirapalli and South Arcot districts are also important for this crop and contribute 0.9 lakh maunds of the total production.

In Kerala, turmeric producing centres are concentrated in the Malabar region which accounts for 0.6 lakh maunds or 65.2 per cent of the total crop produced in the State during 1960-61. The remaining production of 0.3 lakh maunds is contributed by Cochin region.

(2) TREND

The trend of production of turmeric in India during the years 1951-52 to 1960-61 may be seen from the following table and is illustrated in the graph facing page 6.

TABLE 5

Trend of production of turmeric in India during the years 1951-52 to 1960-61

Year	Production (’000 mds.)
1951-52	3,893.3
1952-53	2,927.3
1953-54	3,194.8
1954-55	3,550.9
1955-56	4,759.3
First Plan period average	3,665.1 (1,368.0)
1956-57	4,165.4
1957-58	3,211.0
1958-59	2,652.8
1959-60	2,601.8
1960-61	2,835.4
Second Plan period average	3,093.3 (1,154.5)

Figures in brackets indicate quantity in quintals.

During 1951-52, the first year of the First Five Year Plan, the production amounted to 38.93 lakh maunds. During the subsequent years a continuous declining trend was noticed in the production till 1954-55. During 1955-56, the last year of the First Plan period, there was a sharp recovery, the production rising to a level of 47.59 lakh maunds representing an increase of 25.8% over the average of the pre-Plan period. This increase in production was in keeping with the corresponding increase in acreage during this year. This boom period, however, did not last long and from the beginning of the Second Five Year Plan period, a declining trend in production was noticed which continued in the subsequent years also and touched the low level of 26.53 lakh maunds during 1958-59 representing a decrease of 30.0% over the pre-Plan average.

During the present survey, it was observed that in 1959-60 and 1960-61 there were again signs of slight recovery and the production has again shown an upward trend as a result of favourable gains in the Indian turmeric prices.

Since there has not been much variation in the yield per acre during the last ten years, production has also moved in consonance with the acreage as can be seen from the graph facing page 6.

(3) QUALITIES AND TYPES

As stated earlier, *Curcuma longa* is by far the most important quality produced, the total quantity produced being estimated at 27·0 lakh maunds or 95·1 per cent of the total Indian crop of 1960-61. As compared with this, the production under *Curcuma aromatica* was negligible and amounted to 1·36 lakh maunds or 4·9% of the total crop.

Depending on the quality of the commercial product, such as its appearance, maturity, weight, length and thickness, intensity of colour of the core and aroma, turmeric produced in different areas is known by various local trade names. There are as many as 16 such regional qualities known in the trade and their estimated production during 1960-61 is shown in Table 6.

TABLE 6

Estimated quantities of important commercial qualities of turmeric produced in India during 1960-61

(In terms of cured turmeric)

Sl. No.	Commercial quality	Where grown	Estimated production	
			('000 mds.)	Percentage to total
(1)	(2)	(3)	(4)	(5)
1.	Rajapuri	Maharashtra	585·2	20·6
2.	Duggirala	Andhra Pradesh	436·1	15·4
3.	Cuddapah	Andhra Pradesh	255·6	9·0
4.	Berhampuri	Orissa	212·7	7·5
5.	Erode	Madras	201·1	7·1
6.	Nizamabad	Andhra Pradesh	164·4	5·8
7.	Koraput	Orissa	151·6	5·3
8.	Kasturi	Andhra Pradesh	136·0	4·8
9.	Chhaya	Andhra Pradesh	102·6	3·6
10.	Kodur	Andhra Pradesh	60·8	2·2
11.	Salem	Madras	53·0	1·9
12.	Waigaon	Maharashtra	45·0	1·6
13.	Alleppey	Kerala	33·3	1·2
14.	Karur	Madras	27·4	1·0
15.	Tekurpettah	Andhra Pradesh	20·1	0·7
16.	Savara	Orissa	12·2	0·4
17.	Others . . . .	. . . .	338·3	11·9
TOTAL ALL-INDIA			2,835·4	100·0

It may be seen from the above table that the 16 commercial qualities put together account for as much as 88·1 per cent of the total turmeric production in India during 1960-61. These commercial qualities are produced in the major producing States of Andhra Pradesh, Maharashtra, Orissa, Madras and Kerala.

It will be further seen from Table 6 that Rajapuri and Duggirala are the two most important commercial qualities of turmeric produced in India. These two varieties accounted for 20·6% and 15·4% respectively of the total Indian production in 1960-61. Cuddapah, Berhampuri and Erode are next in importance and contributed 9·0 per cent, 7·5 per cent and 7·1 per cent respectively.

The other trade varieties which contribute 11·9 per cent of total production are not known by any special local name and are not of much commercial importance. Some of the commercial qualities like Kasturi and Alleppey finger turmeric, though produced in small quantities, are of special commercial importance due to their quality characteristics. The commercial qualities produced in the different regions consist of two types, *viz.*, bulbs and fingers. The mother rhizomes that develop immediately from the base of the turmeric plant is round or ovoid in shape and are commercially known as "bulbs" or "rounds". The daughter rhizomes which develop from the mother rhizomes laterally are long and finger like in appearance and are therefore referred to as "fingers". In different regions these bulbs and fingers are known by various local names as indicated below :

TABLE 7

Region	Local name for	
	Bulbs	Fingers
North India	Gola Gadde or Gatta	} Phalli
Andhra Pradesh	Dumpa or Kaya	} Kombu or Chella
Maharashtra	Gadda	Kadi
Madras	Kizhangu	Virali
Orissa	Munda	Pheda or Chella

During the survey, detailed enquiries were made regarding the proportion of bulbs and fingers produced in different regions. Based on the information collected, the total quantity of bulbs and fingers

produced in India and its distribution in the different States during 1960-61 has been estimated and given in Appendix V, a summary of which is also given below :

TABLE 8

Variety	Bulbs	Fingers	Total
Curcuma longa	637.2 (22.5%)	2,059.7 (72.6%)	2,696.9 (95.1%)
Curcuma aromatica	36.5 (1.3%)	102.0 (3.6%)	138.5 (4.9%)
TOTAL	673.7 (23.8%)	2,161.7 (76.2%)	2,835.4 (100.0%)

The bulbs and fingers produced in these different regions are also sometimes polished and to meet the consumers' preferences in certain specific centres, both polished and unpolished qualities are marketed. The quantity of turmeric that ultimately finds its way into the markets in the polished form is highly variable from State to State and from year to year. On the basis of enquiries made during the present survey in the assembling and consuming centres, some estimates have been arrived at as indicated in Table 9.

TABLE 9

Estimated break-up of production according to raw or fresh turmeric, and cured and processed turmeric (polished and unpolished) in important producing States in India during 1960-61

(Quantities in '000 maunds)

State	Raw or fresh turmeric	Cured and processed turmeric			Grand Total
		Polished	Unpolished	Total	
Andhra Pradesh	213.2	559.5	351.0	910.5	1,123.7
Maharashtra	135.5	497.6	69.4	567.0	702.5
Orissa	80.1	4.0	297.8	301.8	381.9
Madras	39.0	259.5	43.5	303.0	342.0
Kerala	24.0	..	71.8	71.8	95.8
Others	37.9	..	151.6	151.6	189.5
TOTAL	529.7*	1,320.6†	985.1	2,305.7	2,835.4
Percentage to total production	18.7	46.6	34.7	81.3	100.0

*In terms of cured turmeric.

†Without taking into account the wastage during polishing.

It may be seen from Table 9 that out of a total production of 2,835.4 thousand maunds during 1960-61, 1,320.6 thousand maunds or 46.6% was processed and converted into the polished form, while 985.1 thousand maunds or 34.7% was processed but was marketed in the unpolished form. Production of polished turmeric is more popular in the States of Maharashtra, Madras and Andhra Pradesh and is more or less absent in other producing States. Utilisation of turmeric in raw or fresh form is estimated at 529.7 thousand maunds or 18.7% of the total production.

It is of interest to note that while bulk of the commercial qualities is marketed after processing both in the polished and unpolished form, certain qualities like Waigaon, Kasturi and Alleppey finger turmeric are usually marketed only in the unpolished form.

(4) CULTIVATION EXPENSES AND COST OF PRODUCTION

Owing to different cultivation practices followed, the cost of cultivation of turmeric varies from State to State and also from region to region within the same State.

The average cultivation expenses per acre and the cost of production per standard maund of cured turmeric in the five major producing States of Andhra Pradesh, Maharashtra, Orissa, Madras and Kerala, as estimated during the survey, are given in Appendix VI and these are also summarised below :

TABLE 10

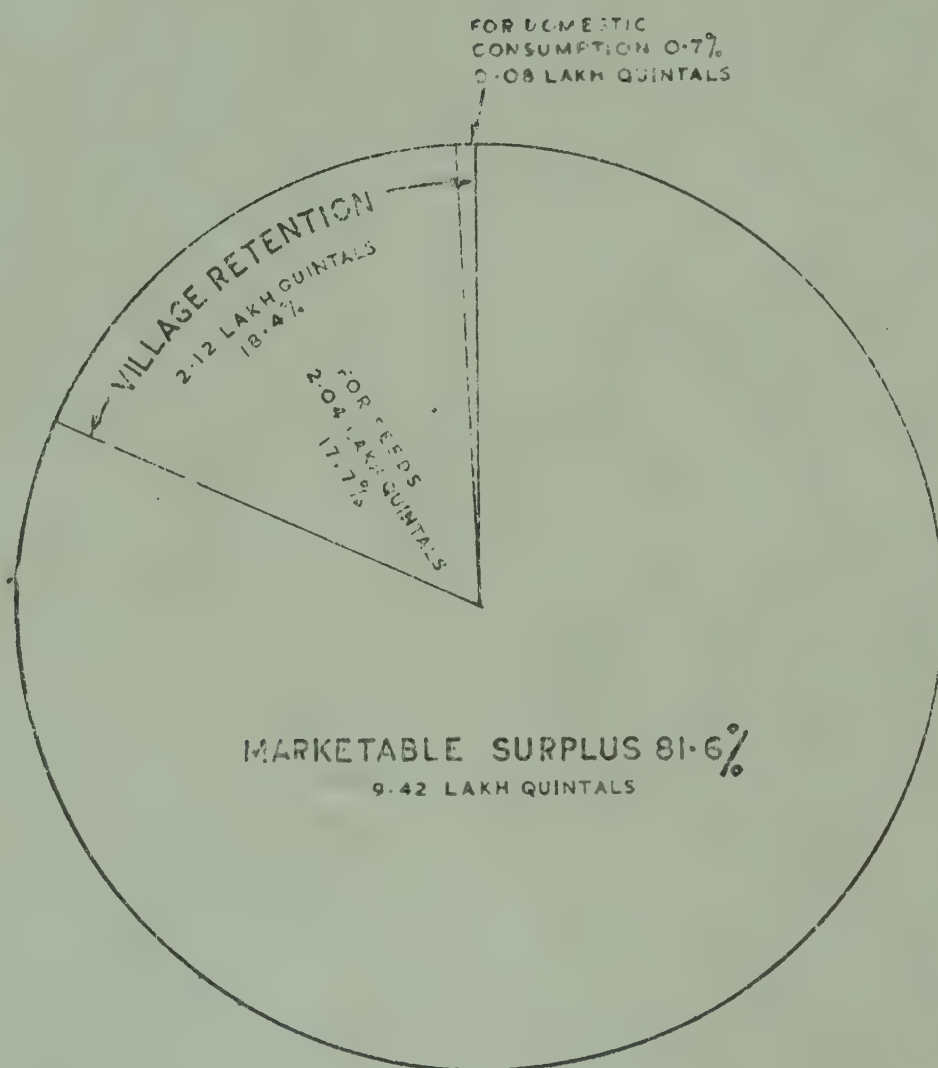
Average cultivation expenses per acre and cost of production per maund of cured turmeric in major producing States in India

(Average of 1958-59 to 1960-61)

Sl. No.	Item of expenditure	Andhra Pradesh	Maharashtra	Orissa	Madras	Kerala
1	Cost of cultivation including harvesting (in rupees).	783.85	961.00	285.50	891.25	319.70
2.	Cost of curing and processing. (in rupees).	35.00	51.00	25.00	49.00	15.00
3.	Cost of production (1+2) (in rupees).	818.85	1,012.00	310.50	940.25	334.70
4.	Average yield per acre in standard maunds (in terms of cured produce).	37.00	39.00	19.00	38.00	12.00
5.	Cost of production per standard maund (in rupees).	22.13	25.95	16.34	24.74	27.90

It may be observed from Appendix VI that the cultivation expenses consist mainly of expenditure on seed material, manure and manuring, irrigation, harvesting, labour, etc. In the States of Andhra Pradesh, Maharashtra and Madras where the crop is grown under irrigation and intensive methods of cultivation are adopted, the average cultivation expenses per acre amounted to Rs. 783.85, Rs. 961.00

ESTIMATED VILLAGE RETENTION AND MARKETABLE SURPLUS OF TURMERIC IN INDIA. [AVERAGE OF 1956-57 TO 1960-61]



and Rs. 891·25 respectively during 1958-59 to 1960-61. As compared with this, the cost of cultivation is much lower in the rainfed areas of Orissa and Kerala, being Rs. 285·50 and Rs. 319·70 respectively. Higher cultivation expenses in Andhra Pradesh, Maharashtra and Madras are, however, compensated by higher yields per acre in these States.

There is little variation in the costs of production per standard maund in the States of Andhra Pradesh, Maharashtra and Madras. The cost of production per maund is the lowest (Rs. 16·34) in Orissa, and the highest (Rs. 27·90) in Kerala. In Kerala State, even though the cultivation expenses are just about the same as in Orissa, the cost of production is the highest among all the five States. This is mainly due to the fact that the yield of turmeric per acre in this State is the lowest among the major producing States.

D. Quantities retained by Producers for Different Purposes

Out of the total turmeric crop produced on the farms, a certain proportion is usually retained as seed by the producers for raising the next season's crop. To a smaller extent the produce is also retained for domestic consumption. The system of paying wages in kind does not appear to be prevalent in the case of turmeric in any of the growing States.

Reliable data regarding the quantities retained by the growers for seed and domestic purposes in the different States are not available. However, based on the information collected during the present survey, the average quantities retained annually during the period 1956-57 to 1960-61 have been worked out and are given in Appendix VII.

It may be seen from the appendix that on an average, 17·7 per cent of the total production in India is retained by the producers for use as seed. The lowest retention was noticed in Madras, being only 9·3 per cent. It amounted to 18·5 per cent and 17·8 per cent in Andhra Pradesh and Maharashtra respectively. The retention was, however, highest in the States of Orissa and Kerala and amounted to 22·9 per cent and 22·1 per cent respectively. These higher percentages should not be taken to mean that higher seed rates are adopted in these States. These only reflect poorer yields per acre obtaining in these States.

Both bulbs and fingers are used as seed material but only good quality rhizomes are selected for the purpose and retained. In some regions, bulbs are used as seed material while in other States only fingers are used for the purpose. There is, however, no scientific evidence to prove the superiority or otherwise of these regional preferences. It will be seen that out of 17·7 per cent of the total production retained for seed purposes, 12·6 per cent is in the form of bulbs and 5·1 per cent in the form of fingers.

Comparatively small quantities are retained by the growers for domestic consumption. The quantity retained by each family ranges from 10 to 25 lbs. for domestic consumption. The retention is both in the form of fresh rhizomes and as cured turmeric. In the fresh

form it is used as a cosmetic, while in the cured form it is used as a condiment. Usually only ill-formed, immature and poor quality rhizomes that will spoil the quality of the marketable produce are kept apart for domestic consumption. In certain areas, where the cultivation is only in small patches, the producers sell their whole crop and do not retain any quantity for domestic consumption. The average quantity retained for domestic consumption is small and has been found to work out to 0.7 per cent of the total annual production of this crop.

The average quantities retained by the producers during 1960-61 have been worked out and are shown in Table 11.

TABLE 11

Estimated quantities of turmeric retained by growers for various purposes in important States in India during 1960-61

(Quantities in '000 maunds of cured turmeric)

State	Total production	Quantities retained for seed purpose				Quantities retained for domestic consumption		Total qnty. retained	Percentage
		Bulbs	Fingers	Total	Percentage	Total	Percentage		
Andhra Pradesh.	1123.7	113.5	99.7	213.2	19.0	6.7	0.6	219.9	19.6
Maharashtra	702.5	135.5	..	135.5	19.3	4.7	0.7	140.2	20.0
Orissa . . .	381.9	62.5	17.6	80.1	21.0	2.3	0.6	82.4	21.6
Madras . . .	342.0	15.6	23.4	39.0	11.4	3.1	0.9	42.1	12.3
Kerala . . .	95.8	16.8	7.2	24.0	25.1	1.2	1.2	25.2	26.3
Others . . .	189.5	22.7	15.2	37.9	20.0	1.9	1.0	39.8	21.0
TOTAL ALL-INDIA.	2,835.4 (1,058.3)	366.6 (136.8)	163.1 (60.9)	529.7 (197.7)	18.7 ..	19.9 (7.4)	0.7 ..	549.6 (205.1)	19.4

Figures in brackets indicate quantity in quintals.

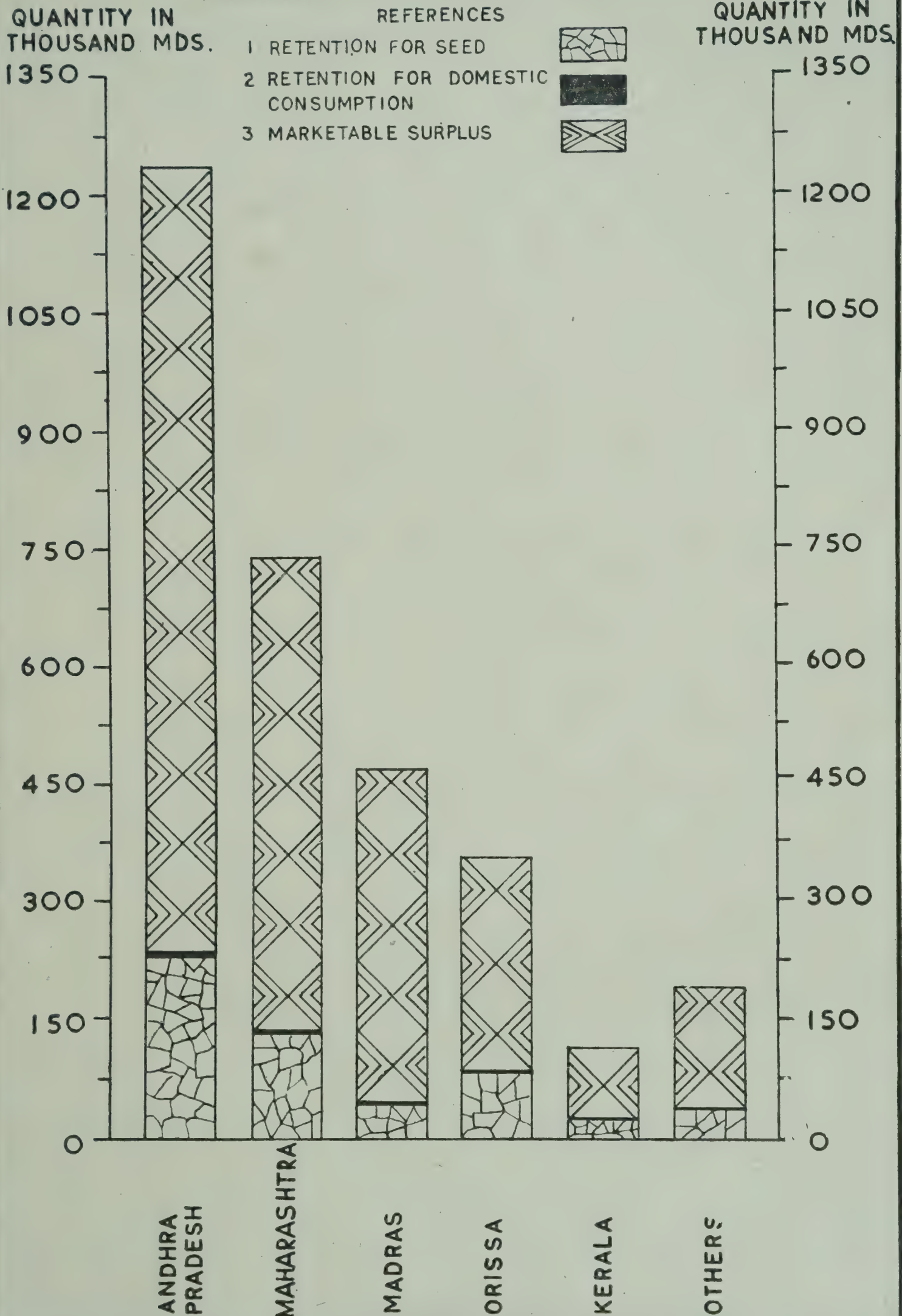
Out of the total crop of 2,835.4 thousand maunds produced in India during 1960-61, 529.7 thousand maunds or 18.7 per cent were retained for seed purpose and 19.9 thousand maunds or 0.7 per cent for domestic consumption. The total retention amounted to 549.6 thousand maunds or 19.4 per cent of the total production.

E. Seasons of Marketing

The flow of supplies from villages to markets begins soon after the crop has been harvested and cured. The maximum flow, however, takes place during the first four months after harvest. Turmeric is taken to markets invariably after being cured and processed. There is, therefore, a time lag of about 20 to 25 days between the harvesting of the crop and the first arrivals in markets. The peak period of marketing in different areas varies with the time of harvest.

ESTIMATED VILLAGE RETENTION AND MARKETABLE SURPLUS OF TURMERIC IN INDIA.

(AVERAGE OF 1956-57 TO 1960-61)



The normal periods of sowing, harvesting and marketing of bulk of the crop in the five major producing States are indicated in Table 12 and the arrivals of the crop in important assembling markets, based on the average of the recent few years, are given in Appendix VIII.

TABLE 12

Normal periods of sowing, harvesting and peak period of marketing of turmeric in the five major producing States

State	Sowing season	Harvesting season	Marketing season
1. Andhra Pradesh:			
East and West Godavari.	May—June	December—January	January—April
Nizamabad .	May—June	January—February	February—April
Cuddapah .	June—July	February—March	March—May
Guntur/Krishna	July—August	March—April	April—June
2. Maharashtra. .	May—June	January—February	February—May
3. Orissa:			
One-year crop	June	December—January	February—May
Two-year crop	June	November—February	December—June
4. Madras . . .	May—June	February—April	March—May
5. Kerala . . .	May—June	December—January	February—April

It may be seen from Table 12 that in Andhra Pradesh harvesting commences early in the month of December in the East and West Godavari areas and in January—February in Nizamabad, a little later in Cuddapah and as late as March—April in Guntur/Krishna areas. Accordingly, the marketing season begins early in East and West Godavari areas and late in Guntur/Krishna area.

In Maharashtra, the harvesting commences in January—February and the marketing of the crop is at its peak in the months from February to May.

In Orissa, there is the practice of cultivating turmeric either as a one-year crop or as a two-year crop. Even though in both cases the sowings take place during June, the one-year crop is harvested in December—January and marketed from February to May, while the two-year crop is harvested from November to February during the second year and marketed during December to June. Thus in Orissa State, the marketing season starts earlier and is longer on account of the flow of supplies from these two crops.

In Madras State, the crop is generally harvested during February—April and the bulk of the crop is marketed during March—May.

Harvesting of the crop in Kerala State is done in December—January and the produce marketed during February—April.

Generally speaking, the peak period for marketing of turmeric in most of the producing areas in India commences from February and lasts till May.

F. Marketable Surplus

The Statewise marketable surplus of turmeric during the years 1956-57 to 1960-61 has been worked out as indicated in Appendix IX and is summarised in Table 13.

TABLE 13

Estimated marketable surplus of turmeric in important States in India (average of 1956-57 to 1960-61)

(Quantities in '000 maunds)

State	Production	Village retention		Marketable surplus	
		Quan- tity	Per- centage	Quan- tity	Per- centage
Andhra Pradesh	1,232.9	236.7	19.2	996.2	80.8
Maharashtra	737.5	135.9	18.4	601.6	81.6
Madras	465.7	47.3	10.2	418.4	89.8
Orissa	353.9	83.2	23.5	270.7	76.5
Kerala	114.5	26.6	23.3	87.9	76.7
Others	188.8	39.7	21.0	149.1	79.0
TOTAL ALL-INDIA		569.4	18.4	2,523.9	81.6
		(1,154.6)	(212.4)	(942.2)	

Figures given in brackets indicate quantity in Quintals.

Out of the average annual quantity of 3,093.3 thousand maunds produced in India during this quinquennium, 569.4 thousand maunds were retained by the producers for different purposes leaving a balance of 2,523.9 thousand maunds or 81.6 per cent of the production as marketable surplus. The proportion of marketable surplus was the highest in Madras, amounting to 89.8 per cent with Maharashtra and Andhra Pradesh closely following with 81.6 and 80.8 per cent respectively. In Orissa and Kerala, the percentage was slightly lower, being 76.5 per cent and 76.7 per cent respectively, owing to higher retention in the villages.

The marketable surplus of turmeric in important producing States in India has been separately estimated during the year of survey. These estimates are given in Table 14 for the purpose of comparison.

TABLE 14

Estimated marketable surplus of turmeric in important producing States in India during 1960-61

(Quantities in '000 maunds)

State	Production	Retention	Marketable surplus			
			Bulbs	Fingers	Total	Percentage
Andhra Pradesh	1,123.7	219.9	164.0	739.8	903.8	80.4
Maharashtra	702.5	140.2	5.0	557.3	562.3	80.0
Orissa	381.9	82.4	33.0	266.5	299.5	78.4
Madras	342.0	42.1	68.4	231.5	299.9	87.7
Kerala	95.8	25.2	6.5	64.1	70.6	73.7
Others	189.5	39.8	23.7	126.0	149.7	79.0
TOTAL ALL-INDIA	2,835.4	549.6	300.6	1,985.2	2,285.8	80.6
	(1,058.3)	(205.1)	(112.2)	(741.0)	(853.2)	

Figures given in brackets indicate quantity in '000 quintals.

Out of a total turmeric production of 2,835.4 thousand maunds during 1960-61, 549.6 thousand maunds were retained in the villages for different purposes and the balance amounting to 2,285.8 thousand maunds consisting of 300.6 thousand maunds of bulbs and 1,985.2 thousand maunds of fingers has been estimated as marketable surplus.

It will be observed that the marketable surplus during 1960-61 was less and amounted to only 80.6 per cent of the production as compared to the quinquennial average of 81.6 per cent. This was due to the fact that larger quantities were retained in villages during 1960-61 in all the major producing States except Orissa for sowing during the ensuing season and the proportion of the surplus crop made available for the markets was therefore correspondingly reduced. It may be observed that in the year when the prices are high; as in 1960-61, the producers retain comparatively large quantities for seed purposes with a view to increasing the sowings during the ensuing season. The actual area sown is, however, largely determined by the prices prevailing at the time of actual sowing.

G. Imports

India is surplus in regard to the production of turmeric. This article is not, therefore, imported from any foreign country.

H. Exports

India has been an exporter of turmeric for the past several years. The produce is exported to as many as 64 countries.

Until December, 1956, statistics of foreign trade in turmeric were published in the "Accounts relating to the foreign trade and navigation of India". Since January 1957, this publication has been renamed as "Monthly Statistics of Foreign Trade of India". The

trade classification of turmeric has also been changed on the basis of the Standard International Trade Classification recommended by the Economic and Social Council of the United Nations. Previously turmeric was included under spices. It is now shown as 'turmeric bark and root' under the main heading "crude vegetable material—inedible", sub-section "plants and parts of plants for use in dyeing and tanning".

Statistics of trade movements through land frontier routes are not now separately recorded. With the introduction of the revised classification since January 1957, these are amalgamated with the "Monthly Statistics of Foreign Trade of India". However, barring the quantities exported to East and West Pakistan and Afghanistan through land frontier routes, the bulk of the Indian export trade in turmeric is by sea.

(1) TREND OF EXPORTS

The quantities and values of turmeric exported from India during the years 1947-48 to 1960-61 are given in Table 15 and are also illustrated in the graph facing this page.

TABLE 15

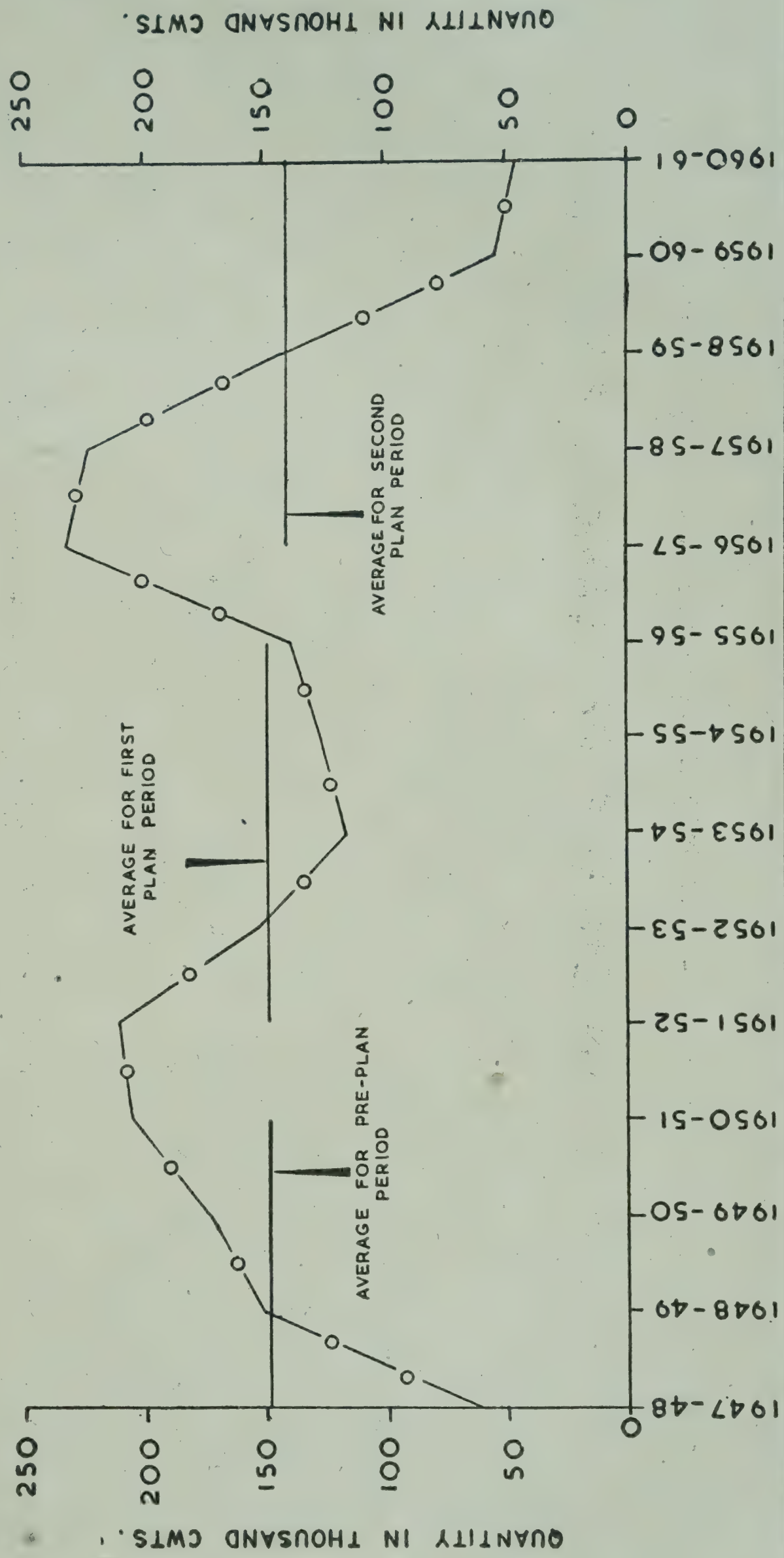
Quantity and value of Turmeric exported from India during the years 1947-48 to 1960-61

Year	Quantity	Value	Cost per cwt.
	(cwts.)	(Rs.)	Rs. P.
1947-48	61,037	32,43,082	53·13
1948-49	151,036	84,27,248	55·80
1949-50	172,867	1,10,22,088	63·76
1950-51	205,591	1,25,83,161	61·20
Pre-Plan Period Average	147,633	88,18,895	59·74
	(75,000)	(88,18,895)	(117·58)
1951-52	211,701	1,00,26,032	47·36
1952-53	153,350	46,92,007	30·60
1953-54	115,817	65,53,660	56·59
1954-55	126,112	1,09,99,387	87·22
1955-56	139,299	1,20,03,319	86·17
First Five Year Plan Average	149,256	88,54,881	59·33
	(75,825)	(88,54,881)	(116·78)
1956-57	232,455	1,11,36,614	47·91
1957-58	224,302	65,35,679	29·14
1958-59	142,323	44,79,791	31·48
1959-60	54,344	28,25,277	51·99
1960-61	45,473	25,83,981	56·82
Second Five Year Plan Average	139,779	55,12,268	39·44
	(71,011)	(55,12,268)	(77·62)

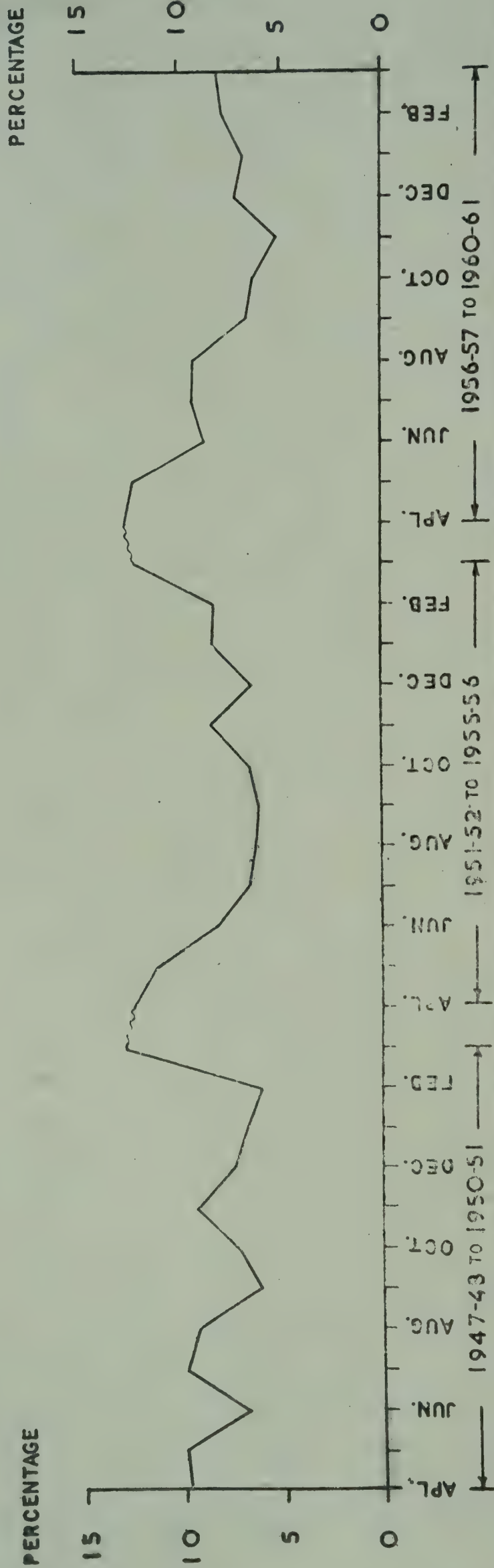
NOTE.—Figures in brackets indicate quantity in quintals and cost per quintal.

The total exports of turmeric from India during the year 1947-48 were of the order of 0·6 lakh cwts. valued at Rs. 32 lakhs. The annual exports increased steadily thereafter and touched the level of

TREND OF EXPORTS OF TURMERIC FROM INDIA.



PERIODICITY OF EXPORTS OF TURMERIC FROM INDIA.



2.1 lakh cwts. valued at over Rs. 1 crore during 1951-52. The high level of exports recorded during 1951-52 may be attributed to the Korean war and the resulting tendencies for stock piling by the different importing countries. There was a fall of about 0.5 lakh cwts. in the total exports during 1952-53. The exports dropped further during 1953-54 reaching 1.2 lakh cwts. From 1954-55 however, the exports once again started gaining the lost grounds, and reached an all-time peak level of 2.32 lakh cwts. valued at Rs. 1.1 crores during 1956-57. This unprecedented increase in exports was due to the heavy purchases made by many of the importing countries, particularly the Middle East, consequent to the Suez Canal crisis and the disturbed political situation in the world during 1956-57. With the imposition of restrictions by Pakistan on the imports of turmeric into their country, and with the diminished demand from the Middle East countries during 1956-57, the exports started declining from 1957-58 onwards and touched the lowest level of 0.5 lakh cwts. valued at Rs. 25 lakhs during 1960-61.

The average exports of turmeric from India have shown very little variation. During the pre-Plan period, First Plan period and Second Plan period, the average annual exports have ranged from 1.4 lakh cwts. to 1.5 lakh cwts. only. Although there has been an unprecedented fall in India's exports during the past two years, it would appear that the normal demand for Indian turmeric in the world market lies around 1.5 lakh cwts.

(2) PERIODICITY

The average monthly exports of turmeric from India during the years 1947-48 to 1960-61 may be seen from Appendix X and the variations in these average exports during different months during the pre-Plan, First Plan and Second Plan periods may be seen from Table 16. This is also illustrated in the graph facing this page.

TABLE 16
Periodicity of exports of turmeric from India

Month	(Quantities in cwts.)					
	1947-48 to 1950-51 average		1951-52 to 1955-56 average		1956-57 to 1960-61 average	
	Quantity	Percentage	Quantity	Percentage	Quantity	Percentage
April . . .	14,186	9.6	18,315	12.3	17,819	12.7
May . . .	14,403	9.8	16,516	11.1	17,275	12.4
June . . .	9,722	6.6	12,059	8.1	12,157	8.7
July . . .	14,531	9.8	9,671	6.5	13,200	9.4
August . . .	13,642	9.2	9,187	6.1	12,942	9.3
September . . .	8,881	6.0	9,004	6.0	9,173	6.6
October . . .	10,497	7.1	9,685	6.5	8,820	6.3
November . . .	13,537	9.2	12,620	8.4	7,183	5.1
December . . .	10,817	7.3	9,549	6.4	9,946	7.1
January . . .	9,852	6.7	12,207	8.2	9,295	6.7
February . . .	8,734	5.9	12,285	8.2	10,717	7.7
March . . .	18,831	12.8	18,158	12.2	11,252	8.0
TOTAL .	147,633 (75,000)	100.0	149,256 (75,825)	100.0	139,779 (71,011)	100.0

NOTE.—Figures in brackets indicate quantity in quintals.

As may be seen from the above table, the exports of turmeric from India continue in small quantities throughout the year. This is clearly noticed during the pre-Plan period.

The exports are however slightly higher during the months of March, April and May and nearly one-third of the average annual exports takes place during these three months.

The exports from Kerala take place exclusively during these months and the increase in the overall exports is mainly due to this regional periodicity. The exports show little variation during other months but are slightly lower during the months of September to November. There is no noticeable change in the seasons of export during the pre-Plan, First Plan and Second Plan periods.

(3) DESTINATIONS

Turmeric is exported from India to as many as 64 different countries of which twelve are the principal buyers. The individual off-take of other countries has been negligible.

The annual exports of turmeric to different destinations during the years 1947-48 to 1960-61 are given in Appendix XI while the average quantities exported to these countries during the pre-Plan, First Plan and Second Plan periods are given in Table 17.

TABLE 17

Export of turmeric from India to principal destinations

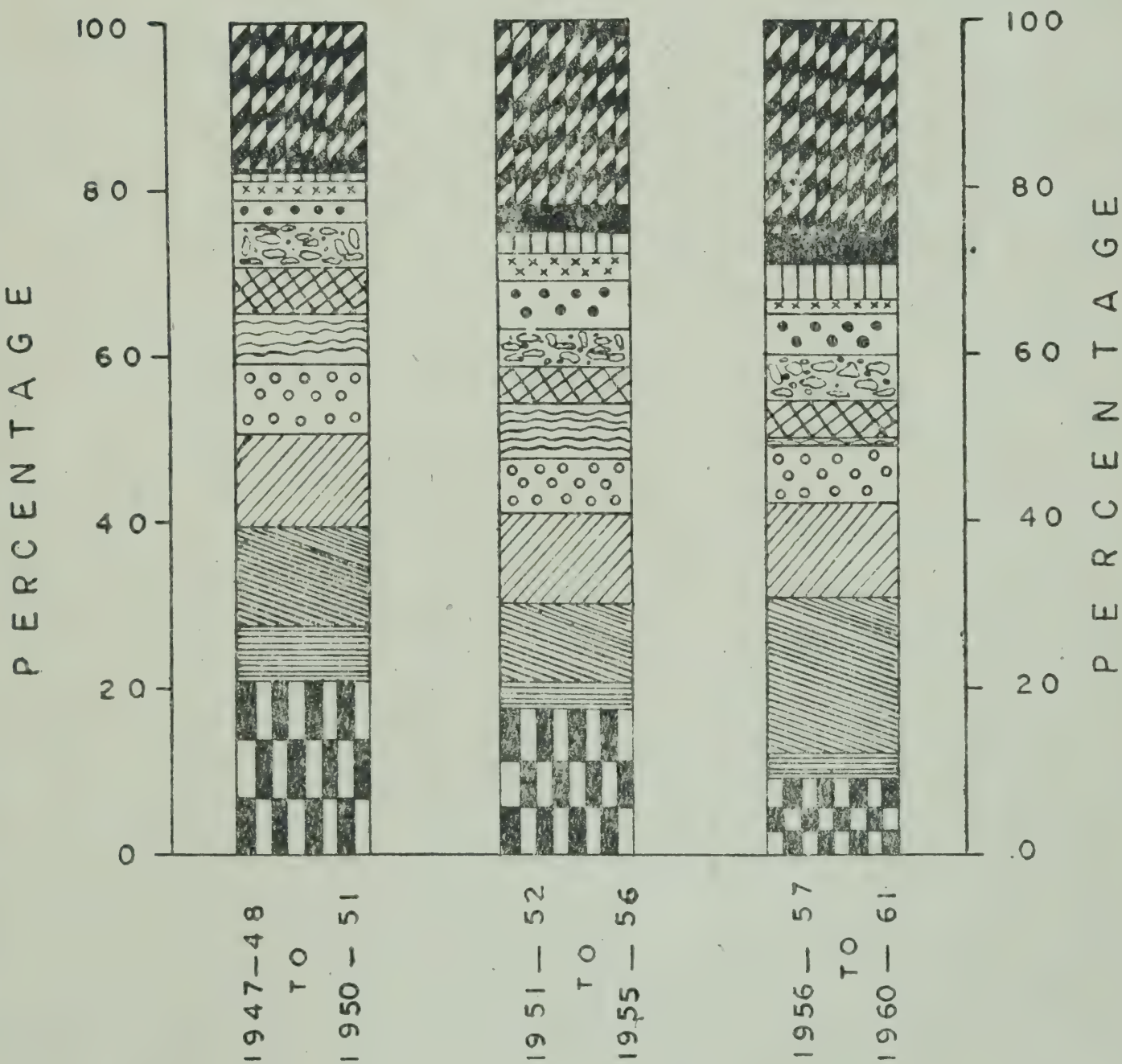
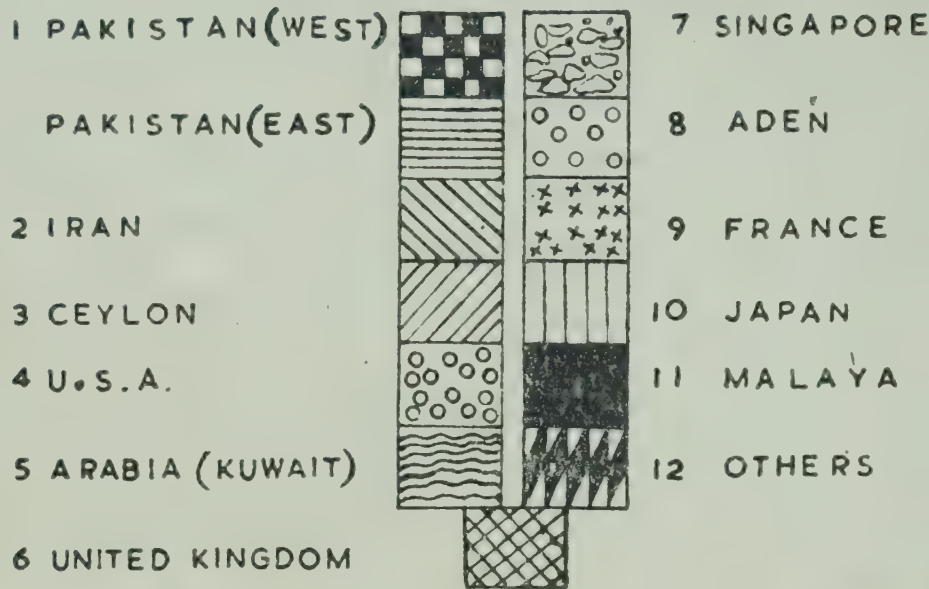
Sl. No.	Destination	Average (1947-48 to 1950-51)		Average (1951-52 to 1955-56)		Average (1956-57 to 1960-61)	
		Quantity (cwts.)	Percentage	Quantity (cwts.)	Percentage	Quantity (cwts.)	Percentage
1.	Pakistan West	30,242	20.5	25,481	17.1	12,871	9.2
2.	Iran	17,992	12.2	14,240	9.5	25,981	18.6
3.	Ceylon	16,230	11.0	16,207	10.8	15,881	11.4
4.	U.S.A.	12,832	8.7	13,022	8.7	9,810	7.0
5.	Pakistan East	9,999	6.8	5,238	3.5	4,247	3.0
6.	Arabia*	8,928	6.0	6,699	4.5	1,087	0.8
7.	United Kingdom	8,238	5.6	6,805	4.6	6,170	4.4
8.	Singapore	7,893	5.3	6,851	4.6	7,828	5.6
9.	Aden	3,788	2.6	8,469	5.7	6,916	4.9
10.	France	3,371	2.3	5,077	3.4	2,549	1.8
11.	Japan	1,136	0.8	3,625	2.4	5,837	4.2
12.	Malaya	1,086	0.7	5,178	3.5	5,517	4.0
13.	Others	25,898	17.5	32,364	21.7	35,085	25.1
TOTAL		147,633 (75,000)	100.0	149,256 (75,825)	100.0	139,779 (71,011)	100.0

*After 1949-50 read Arabia as Kuwait.

NOTE.—Figures in brackets indicate quantity in quintals.

SHARE OF DIFFERENT COUNTRIES IN THE EXPORTS OF TURMERIC FROM INDIA

REFERENCES



During the pre-Plan period Pakistan was India's most important customer accounting for 27·3% of the country's total annual exports. Iran, Ceylon and U.S.A. were the next principal buyers, their respective shares in the total exports being 12·2%, 11·0% and 8·7%. Arabia, U.K. and Singapore came next, their individual off-take being 5 to 6 per cent of the average annual exports.

During the First Plan period there was no significant change in the relative position of our principal buyers of turmeric, except that Aden, France, Japan and Malaya imported larger quantities as compared to the pre-Plan period.

The position, however, has changed during the Second Plan period. Pakistan has considerably reduced her imports of turmeric from India while Iran took comparatively larger quantities and became the chief importer of Indian turmeric. The imports of turmeric by other countries continued to remain more or less the same.

(4) SHARE OF DIFFERENT PORTS

Turmeric is exported mainly from Bombay and Madras ports. The share of different ports in the exports of turmeric from India is given in the following table :

TABLE 18

Share of different ports in exports of turmeric from India

(Quantities in cwts.)

Name of the port	1947-48 to 1950-51 (average)		1951-52 to 1955-56 (average)		1956 (April to December)	
	Quantity	Percentage	Quantity	Percentage	Quantity	Percentage
Share of :						
West Bengal . . .	14,813	10·0	7,061	4·8	2,568	1·4
Madras . . .	42,854	29·0	33,327	22·3	44,343	23·4
Travancore-Cochin	2,214	1·5	9,582	6·4	6,873	3·6
Cochin Port . . .	..	..	3,152	2·1	..	..
Bombay . . .	87,750	59·5	96,122	64·4	135,623	71·6
Saurashtra, Okha & Kutch.	..	..	1	Neg.	..	..
Delhi Airports . .	..	..	11	Neg.	..	..
Sind . . .	2	Neg.	..	..	..	..
TOTAL . . .	147,633 (75,000)	100·0	149,256 (75,825)	100·0	189,407	100·0

NOTE.—Figures in brackets indicate quantity in quintals.

It will be clear from the above table that Bombay is the most important port of shipment for turmeric. The volume of trade passing through Bombay port amounted to 59·5% of the total exports during the pre-Plan period and increased to 64·4% during the First Plan period and to as much as 71·6% during the nine months in 1956. Next to Bombay, Madras port handles appreciable volume of export trade in turmeric and its share was noticed to be 29·0% during the pre-Plan period, 22·3% during the First Plan period and 23·4% during 1956. The shipment from West Bengal was mainly from the Calcutta port. Its share amounted to 10 per cent during the pre-Plan period but it progressively lost its importance and the percentage accounted for only 1·4% of the annual exports during 1956. The port of Cochin, which accounted for 1·5% of the country's exports during the pre-Plan period has slightly gained in importance and had a share of 3·6% of the export trade during the nine months of 1956.

(5) QUALITIES AND TYPES EXPORTED

Turmeric exported from India includes several commercial qualities which consist of both polished and unpolished bulbs and fingers. The various importing countries show varying preferences for specific commercial qualities. The export qualities, therefore, vary depending upon their destinations. The United Kingdom and other continental countries seem to have a preference for unpolished 'fingers' of superior quality, while many of the Middle Eastern, Far Eastern and African countries seem to prefer unpolished 'fingers' of comparatively poor quality. The U.S.A. buys almost exclusively unpolished "Alleppey fingers" and the shipments of this quality from the Cochin port appear largely to meet this demand. Turmeric having a good lemon-yellow colour inside and a smooth surface and good external appearance is liked by foreign buyers particularly in the U.K. and other European countries.

The polished fingers are mainly exported to Pakistan, Ceylon, Singapore, Malaya and other Asian countries, and to a smaller extent to the Middle Eastern countries, while polished bulbs are preferred mainly by the Middle Eastern countries.

Broadly speaking, the export qualities of turmeric consist of trade varieties such as Cuddapah, Erode, Salem, Karur and Alleppey fingers. Figures indicating individual share of these trade varieties in the total exports are not available but enquiries made during the present survey have shown that nearly 70% of the total exports is of fingers, mostly in the unpolished form and the balance of 30% is of bulbs, mostly in the polished form. The total quantities of turmeric exported during 1960-61 thus consisted of 43·3 thousand maunds of fingers and 18·6 thousand maunds of bulbs.

I. Total and Net Available Supplies

The estimated total and net available supplies of turmeric in India during the years 1956-57 to 1960-61 are given in Appendix XII, while Table 19 shows the estimated figures for 1960-61 when the present marketing survey was conducted.

TABLE 19

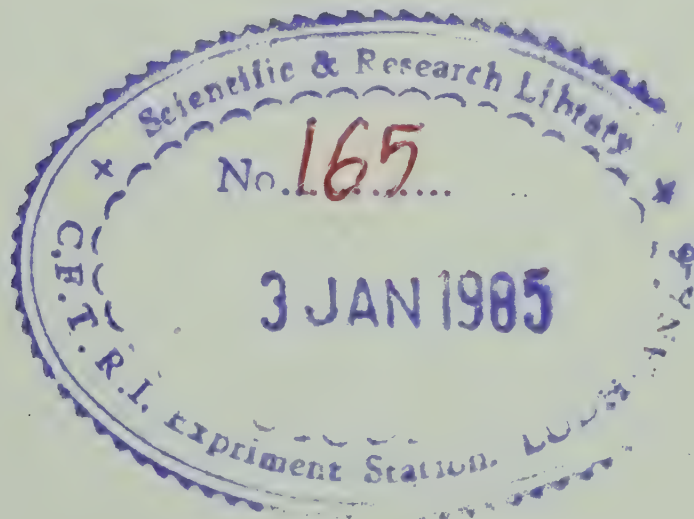
Estimated total and net available supplies of turmeric in India during 1960-61

	Quantities in '000 maunds of cured turmeric				Percentage to total production
	Bulbs	Fingers	Total		
1. Total production	673.7	2,161.7	2,835.4	(1,058.3)	100.0
2. Imports . . . . .	..	..	..	..	..
3. Total supplies	673.7	2,161.7	2,835.4	(1,058.3)	100.0
4. Quantity retained for seed .	366.6	163.1	529.7	(197.7)	18.7
5. Quantity retained by growers for domestic consumption.	6.5	13.4	19.9	(7.4)	0.7
6. Marketable surplus	300.6	1,985.2	2,285.8	(853.2)	80.6
7. Exports	18.6	43.3	61.9	(23.1)	2.2
8. Net supplies available for internal consumption (Item 6 — item 7 + item 5).	288.5	1,955.3	2,243.8	(837.5)	79.1

NOTE. — Figures in brackets indicate quantity in '000 quintals.

During 1960-61, the total supplies of turmeric in India has been estimated at 2,835.4 thousand maunds consisting of 673.7 thousand maunds of bulbs and 2,161.7 thousand maunds of fingers. After deducting the exports of 61.9 thousand maunds and the village retention for seed of 529.7 thousand maunds from the total supplies, the net supplies available for internal consumption during 1960-61 amounted to 2,243.8 thousand maunds. These were available in the form of 288.5 thousand maunds of bulbs and 1,955.3 thousand maunds of fingers.

Although these available supplies during 1960-61 were less as compared with the quinquennial average (*vide* Appendix XII), the present survey has clearly shown that the net supplies available for consumption within the country are on the increase during the last two years and are on the upward trend.



CHAPTER II

UTILISATION AND DEMAND

A. Utilisation

The total available supplies of turmeric in the country (Appendix XII) were of the order of 30·9 lakh maunds during the quinquennium ending 1960-61. Turmeric is mainly utilised as a condiment in this country. It is also used for preparation of dyes, as cosmetic and for medicinal purposes. The quantities estimated to be utilised for various purposes during the above period are indicated in Table 20.

TABLE 20

Utilisation of total supplies of turmeric for various purposes in India during the quinquennium 1956-57 to 1960-61

(Quantities in '000 maunds of cured turmeric)

Supply	1956-57 to 1960-61 (Quantity)	1960-61 (Quantity)	Purpose for which utilised	1956-57 to 1960-61		1960-61	
				Quantity	Per- centage	Quantity	Per- centage
Total production	3,093·3	2,835·4	Exports	190·2	(6·1)	61·9	(2·2)
			Sowing	546·8	(17·7)	529·7	(18·7)
Imports	..	..	Condiments	2,050·0	(66·3)	1,952·1	(68·8)
			Cosmetics	188·5	(6·1)	179·5	(6·3)
			Dyeing	70·7	(2·3)	67·3	(2·4)
			Medicinal & others	47·1	(1·5)	44·9	(1·6)
TOTAL SUPPLY	3,093·3	2,835·4	TOTAL	3,093·3	(100·0)	2,835·4	(100·0)

It may be observed that two-thirds of the total quantity of the available supplies are consumed in the country as condiments. In every household in India it is an indispensable article for flavouring and colouring vegetable and meat preparations and in the preparation of pickles. Smaller quantities of turmeric are utilised for toilet purposes. The practice of anointing the body with turmeric paste is an age-old custom with the Indian women and is still widely prevalent. The quantities of turmeric utilised for other purposes are small. With the introduction of cheap aniline dyes in place of the vegetable dyes during the last decade, the use of turmeric as a source of dye has become very much limited. Smaller quantities of turmeric are, however, still used in the country for dye purposes.

Because of its many medicinal properties it is used as an ingredient in the preparation of medicinal oils, ointments and poultices in the Indian system of medicine, particularly in the household prescriptions.

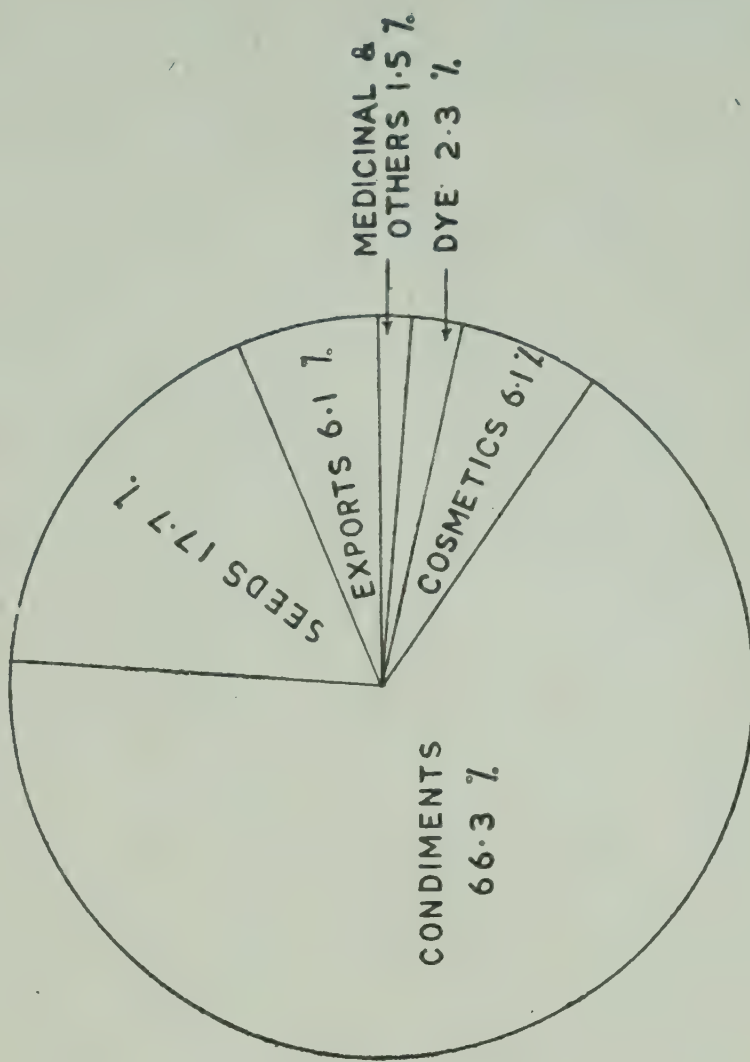
SUPPLY AND UTILISATION OF TURMERIC IN INDIA.

(AVERAGE OF 1956-57 TO 1960-61)

SUPPLY
(11.54 LAKH QUINTALS)



UTILISATION



Turmeric is considered to be a highly auspicious article and is therefore used on all ceremonial occasions and religious rituals. The quantities utilised for medicinal, religious and other purposes are however negligible and are estimated at about 1·5 per cent only of the total supplies.

B. Demand

(1) TOTAL DEMANDS

The stocks carried over being negligible, the total average annual production of turmeric of 30·9 lakh maunds may be taken as the annual demand for turmeric in India during the quinquennium ending 1960-61. As against this, the demand during 1960-61 amounted to 28·4 lakh maunds and was found to have decreased. This reduction in the total demand was mainly due to fall in the level of exports during 1960-61. This can be clearly seen from the following figures :

(Quantity in lakh maunds)			
	Average of 1956-57 to 1960-61	1960-61	Percentage de- crease during 1960-61 over the quinquennial average
Internal demand	29·0	27·8	4·2
Exports	1·9	0·6	68·0
TOTAL DEMAND	30·9	28·4	8·1

The fall in the total demand during 1960-61 has been of the order of 8·1 per cent only. While the internal demand during 1960-61 has decreased by only 4·2 per cent as compared to the quinquennial average, the demand for export has decreased by as much as 68 per cent. It would appear from the above that the internal demand for turmeric has remained more or less stable around 28 lakh maunds and that the fluctuations in the total demand are mainly due to uncertainties of demand for export purposes.

Excepting the quantities required for seed purposes, the demand for turmeric for all other purposes is for the cured and processed types in the form of polished or unpolished bulbs and fingers.

The relative demand for each of these forms of turmeric as estimated during 1960-61 is indicated below:

Estimated demand for various types of commercial turmeric during 1960-61 (in terms of cured turmeric)

(Quantities in '000 maunds)			
Bulbs :			
Raw or fresh for seed		366·6	12·9
Polished		209·2	7·4
Unpolished		97·9	3·4
Fingers :			
Raw or fresh for seed		163·1	5·8
Polished		1,111·4	39·2
Unpolished		887·2	31·3
TOTAL		2,835·4	100·0

It will be seen from the above chart that the total quantity of turmeric used during 1960-61 consisted of 529·7 thousand maunds (in terms of cured turmeric) for seed purposes in the raw or fresh form and 2,305·7 thousand maunds in the cured and processed form. The quantity of raw turmeric consisted of 366·6 thousand maunds of bulbs and 163·1 thousand maunds of fingers (in terms of cured turmeric).

The total quantity of cured and processed turmeric consisted of 307·1 thousand maunds of bulbs which included 97·9 thousand maunds of unpolished turmeric and 209·2 thousand maunds of polished produce. The total quantity of cured and processed fingers was of the order of 1,998·6 thousand maunds including 1,111·4 thousand maunds of polished turmeric and 887·2 thousand maunds of unpolished produce.

The total quantity of polished turmeric was of the order of 1,320·6 thousand maunds and that of unpolished produce 985·1 thousand maunds.

(2) QUALITATIVE

(a) *Seed purposes*.—As already stated, only fresh raw turmeric is used for seed purposes. The demand for seed purposes is for both bulbs and fingers, preference for the one or the other varying from place to place, and also from State to State. However, generally speaking, only good quality bulbs or fingers are selected and used for planting. The growers invariably retain the required quantity of seed material at the time of harvest.

(b) *Condiments*.—For use as condiment, turmeric is in demand both in the form of bulbs and fingers. In the markets of Uttar Pradesh, unpolished fingers are preferred while in Punjab, polished bulbs are greatly in demand. In other consuming centres, both bulbs and fingers are sold, but fingers are noticed to have greater demand than bulbs.

In the non-producing areas, particularly in the urban areas, the demand for turmeric in the powder form has been found to be on the increase. For manufacturing turmeric powder, generally unpolished bulbs are used by the manufacturers.

(c) *Cosmetics*.—The use of turmeric as a cosmetic is appreciable only in the producing States of Madras, Andhra Pradesh, Kerala, Mysore and Orissa. In these States, women use it for anointing their body during their daily bath.

Kasturi turmeric cultivated in parts of Andhra Pradesh and to a smaller extent in Madras State is preferred for toilet purposes in the South because of its peculiar aroma. In other States also, limited quantities are used on ceremonial occasions like marriages and festivals. Generally, polished or unpolished bulbs are preferred for this purpose.

(d) *Dye*.—Turmeric is a source of colouring material for the textile industry. Its use in this field has considerably diminished with the coming into use of cheap coal-tar dyes.

(e) *Exports*.—Both bulbs and fingers are used for export purposes. The U.K. and other continental countries seem to prefer superior quality finger turmeric, both polished and unpolished. The U.S.A. appears to have a preference for the unpolished Alleppey fingers produced in Kerala. Polished fingers also find a market in Pakistan, Ceylon, Singapore, Malaya, the African countries, and to a smaller extent in the Middle Eastern countries. Polished bulbs are specially preferred in the Middle Eastern countries.

As described in the previous chapter, bulk of the crop produced in the country falls under sixteen commercial qualities. The utilisation of each of these commercial qualities has also been estimated and may be seen from the data given in Appendix XIII and from its summary given below:

TABLE 21

Estimated demand for various commercial qualities of turmeric in India (1960-61)

(Excluding demand for seed and domestic consumption)

(Quantities in '000 maunds)

Sl. No.	Commercial quality	Demand			Percentage to total
		Polished	Unpolished	Total	
1.	Rajapuri	468.4	..	468.4	20.5
2.	Duggirala	246.8	103.5	350.3	15.3
3.	Cuddapah	179.8	35.0	214.8	9.4
4.	Erode	163.5	12.8	176.3	7.7
5.	Berhampuri . . . . .	..	166.8	166.8	7.3
6.	Koraput	2.8	116.1	118.9	5.2
7.	Nizamabad	114.7	..	114.7	5.0
8.	Kasturi	21.4	85.5	106.9	4.7
9.	Chhaya . . . . .	..	91.8	91.8	4.0
10.	Kodur	37.4	13.8	51.2	2.2
11.	Salem	41.3	5.2	46.5	2.0
12.	Waigaon . . . . .	..	36.0	36.0	1.6
13.	Alleppey . . . . .	..	24.6	24.6	1.1
14.	Karur	19.3	4.7	24.0	1.1
15.	Tekurpettah . . . . .	..	17.1	17.1	0.8
16.	Savara	1.2	8.4	9.6	0.4
17.	Others	24.0	243.9	267.9	11.7
TOTAL .		1,320.6	965.2	2,285.8	100.0

Among the various commercial qualities, Rajapuri produced in Maharashtra State was in maximum demand. The entire supplies of this quality available for market were in the form of polished fingers. This quality is mainly in demand in the Western Indian States comprising Maharashtra, Gujarat and Rajasthan.

The total marketable surplus of Duggirala quality produced in Andhra Pradesh was estimated at 350·3 thousand maunds, 103·5 thousand maunds in the unpolished form and 246·8 thousand maunds in the polished form. Unpolished fingers of this quality are mainly preferred in the U.P. markets, while the polished fingers are in demand mainly in the markets in Maharashtra, West Bengal, Madhya Pradesh, Delhi and Punjab.

Erode, Salem and Karur qualities of turmeric consisted mostly of polished fingers. These qualities are generally consumed within the State; some despatches are also made to the markets of Calcutta, Bombay, Mysore, Amritsar and also Kerala. Polished fingers from this region are also exported to Ceylon and in smaller quantities to Singapore, Penang and Malaya.

Cuddapah, Kodur and Tekurpettah qualities are produced in Andhra Pradesh and are in demand both in the polished and unpolished forms. Unpolished fingers are preferred in the U.P. markets and polished ones in Maharashtra, Delhi, Punjab and Madhya Pradesh markets. These qualities are particularly in demand for export to the U.K. and other continental countries.

The demand for Berhampuri quality produced in Orissa is mainly from the States of Madhya Pradesh and Bihar and from Calcutta and mostly in the unpolished form.

The two other qualities of turmeric, namely, Koraput and Savara, produced in Orissa, are used mainly within the State in the unpolished form.

The demand for Nizamabad quality produced in Telengana region of Andhra Pradesh and Osmanabad area of Maharashtra consists entirely of polished turmeric. While Hyderabad and other markets in the Telengana region prefer bulbs, the fingers of this quality are mainly in demand in Delhi and Punjab markets and to a smaller extent in Maharashtra.

Bulk of Kasturi quality, produced in Andhra Pradesh, is in demand in the Calcutta markets in the unpolished form. A small quantity of this quality is however marketed in Madras State in the polished form.

Waigaon quality of turmeric which is produced in the Vidarbha region of Maharashtra State and which is not polished is consumed locally and also in Madhya Pradesh markets.

Chhaya is produced in Srikakulam district in Andhra Pradesh and meets the demand from within the district as also from Vishakhapatnam district. This quality is also in the unpolished form.

Alleppey finger turmeric produced in Kerala is mainly in demand for export to U.S.A. and in smaller quantities to Aden. The demand from U.S.A. is generally for superior quality, while Aden prefers cheaper quality.

It may be seen from the foregoing paras that though the production of turmeric is concentrated in a few States, the demand is spread throughout the country.

(3) FACTORS AFFECTING THE DEMAND

Bulk of the turmeric produced in the country is disposed of either for consumption as a condiment within the country or for exporting it to other countries. As discussed earlier, the internal demand for turmeric has been found to be at a fairly stable level around 28 lakh maunds, and wide variations are noticed mainly in regard to foreign exports as can be seen from the following figures:

Year	Exports (’000 mds.)	Percentage to total demand in India
1956-57	316.4	7.6
1957-58	305.3	9.5
1958-59	193.7	7.3
1959-60	74.0	2.8
1960-61	61.9	2.2

With the replacement of dyes of vegetable origin by cheap synthetic dyes, the demand for turmeric as a colouring material has practically ceased in foreign countries. The present foreign demand is mainly for use as a food preservative or as a condiment.

The decline in the export of turmeric noticed in recent years was found to be mainly due to a precipitous fall in the off-take of Pakistan. Instead of the normal off-take of 17,118 cwts. this country took only 37 cwts. of turmeric from India during 1960-61. There is, therefore, urgent need for exploring new markets for minimising the effect of the reduced off-take by Pakistan. Effective publicity for various qualities of turmeric in all the trade exhibitions organised by the Government of India in foreign countries will be of great help in promoting the export of this commodity.

Turmeric is an essential ingredient of Indian curry powder which is exported to many foreign countries. The exports of curry powder, which contains 5 to 7 per cent of turmeric by weight, to the foreign markets, particularly in U.K., Australia and the Arab countries, has been on the increase. To the extent exports of curry powder can be increased, the demand for turmeric will also be increased. It is for the Turmeric panel of the Spices Export Promotion Council to tackle all the allied problems in regard to exports of turmeric.

In order to increase the internal demand, the potentialities of turmeric as a source of pigment and aromatic oil will have to be fully investigated. Researches so far have shown that it is possible to isolate curcumin, the main colouring matter in turmeric and use it as a substitute for lead chromate which is so extensively used in the paints and varnishes industry for the manufacture of yellow paints. The Central Food Technological Research Institute, Mysore, has also recently indicated that there is scope for utilising this colouring matter in hydrogenated vegetable oils in order to detect its presence in ghee.

C. Inter-State Trade

Turmeric, being an article of daily consumption, is in demand all over the country. This has resulted in large scale inter-State movements between the producing and non-producing States. Regular statistics regarding the movement of this commodity by road, rail and waterways are not however maintained and are not therefore available. Exhaustive enquiries were made during the present survey from the trade and on the basis of these enquiries, the inter-State trade in turmeric has been estimated.

The entire quantity of turmeric entering the inter-State trade is contributed by the five major producing States. The details of the inter-State movement of turmeric may be seen from the following table :

TABLE 22

Estimated inter-State trade in turmeric during 1960-61

(Quantities in '000 maunds)

To	From					Total
	Andhra Pradesh	Maharashtra	Orissa	Madras	Kerala	
Andhra Pradesh	..	..	8.5	..	..	8.5
Maharashtra	143.6	..	2.0	10.0	4.2	159.8
Orissa	..	..	..	..	..	..
Madras	28.1	..	2.0	..	1.5	31.6
Kerala	..	7.0	..	20.1	..	27.1
West Bengal	162.0	..	32.0	39.8	..	233.8
Uttar Pradesh	159.2	2.5	..	2.1	..	163.8
Delhi	108.9	38.0	..	12.0	..	158.9
Madhya Pradesh	27.1	67.0	35.0	..	..	129.1
Gujarat	18.0	117.3	..	..	..	135.3
Punjab	33.7	75.5	..	8.6	..	117.8
Rajasthan	Neg.	93.5	..	..	..	93.5
Mysore	15.0	11.7	..	21.0	..	47.7
Bihar	10.0	..	12.0	..	..	22.0
TOTAL	705.6	412.5	91.5	113.6	5.7	1,328.9

It may be seen from the above table that in the inter-State trade in turmeric, Andhra Pradesh figures as the most important among the five major producing States, both in respect of the total quantity despatched as well as the number of destinations during

1960-61. A total quantity of 705·6 thousand maunds, or 53·1 per cent of the total inter-State trade of 1,328·9 thousand maunds, were despatched from this State to as many as ten other States in India. The States of West Bengal, Uttar Pradesh, Maharashtra and Delhi are important destinations, the quantities despatched to these States ranging between 108·9 thousand maunds and 162·0 thousand maunds in 1960-61. The despatches to these four States amounted to as much as 573·7 thousand maunds or 81·4 per cent of the total despatches from Andhra Pradesh. Smaller quantities ranging from 27·1 thousand maunds to 33·7 thousand maunds were also despatched to the States of Punjab, Madras and Madhya Pradesh. Three other States, namely, Gujarat, Mysore and Bihar also received supplies from Andhra Pradesh, though in much smaller quantities.

Maharashtra State which follows Andhra Pradesh accounted for 31·1 per cent of the inter-State trade. A total quantity of 412·5 thousand maunds were despatched to eight States in India. Gujarat State received the maximum quantity of 117·3 thousand maunds of turmeric from Maharashtra and accounted for 28·5 per cent of the total despatches from this State. Rajasthan, Punjab and Madhya Pradesh are also important destinations. Delhi State received a smaller quantity amounting to 38 thousand maunds of turmeric. The States of Mysore, Kerala and Uttar Pradesh receive small quantities from this State.

The share of Madras State in the total inter-State trade in 1960-61 was 8·5%. Out of a total of 113·6 thousand maunds of turmeric despatched from this State, as much as 39·8 thousand maunds or 35 per cent were sent to West Bengal. About 20 thousand maunds each were despatched to the States of Mysore and Kerala. The States of Delhi, Maharashtra, Punjab and Uttar Pradesh also received part of their supplies from Madras, though in smaller quantities.

Even though Orissa is one of the major turmeric producing States in India, its share in the inter-State trade in 1960-61 was only to an extent of 6·9 per cent. A total quantity of 91·5 thousand maunds was despatched from this State mostly to the States of Madhya Pradesh, West Bengal and Bihar and in smaller quantities to Andhra Pradesh, Maharashtra and Madras.

Kerala State accounted for only an insignificant share of 0·4 per cent in the inter-State trade. The despatches from this State are mostly to Maharashtra and Madras.

Among the major producing States, only in the case of Maharashtra sizable quantities of turmeric, amounting to 159·8 thousand maunds, were imported from other producing States, mostly from Andhra Pradesh, in 1960-61. Bulk of the imports, however, is reported to be re-exported to other consuming States. The imports into other producing States of Madras, Kerala and Andhra Pradesh, as evidenced from the data, were comparatively less. No re-export of imported material is reported from these three States. It will also be observed that Orissa State does not import turmeric.

Among the centres in the minor and non-producing States, despatches to Calcutta were the maximum and amounted to 233·8 thousand maunds. Demands for turmeric from the States of Assam, Manipur, Tripura and Bihar are met from Calcutta.

Delhi market, which received a total quantity of 158·9 thousand maunds in 1960-61, meets the demands from Himachal Pradesh and the north-western districts of Uttar Pradesh. The despatches to Punjab from various States amounted to 117·8 thousand maunds. The of Jammu and Kashmir derives its requirements of turmeric from Punjab State in the form of re-exports.

D. Per Capita Consumption

No reliable data are available regarding the carry over stocks or consumption figures of turmeric in the different regions. In the absence of any such data, stocks in hand at the beginning of the season and the anticipated carry over to the next year at the end of the year have been presumed to be equal. The per capita consumption has been estimated on the basis of the population figures of 1961 census and the net supplies available for consumption within the country during 1960-61.

These estimates are given in Appendix XIV and are also summarised below :

TABLE 23

Estimated per capita consumption of turmeric in different States in India during 1960-61

State	Total quantities consumed ('000 mds.)*	Population ('000 persons)	Per capita consumption (lbs.)	+ or - over all-India per capita consumption
Andhra Pradesh	213·4	35,978	0·49	+0·07
Maharashtra	282·3	39,504	0·59	+0·17
Orissa	210·3	17,566	0·98	+0·56
Madras	204·7	33,651	0·50	+0·08
Kerala	79·6	16,875	0·39	-0·03
Others	1,253·5	294,850	0·35	-0·07
ALL-INDIA	2,243·8	438,424	0·42	..

*Includes quantities retained by growers for domestic consumption.

On the basis of the estimated net available supplies, the total quantity of turmeric consumed in India during 1960-61 is reckoned at 2,243·8 thousand maunds. When this is distributed over the total population figures for 1961, the per capita consumption of turmeric in India works out to 0·42 lbs.

The per capita consumption in all the major producing States except Kerala, is higher than the all-India average. The highest per capita consumption of 0·98 lbs. is noticed in the State of Orissa. This is mainly due to the widespread use of turmeric in this State for toilet purpose among womenfolk, particularly in the rural areas. The per capita consumption in the other major producing States of Maharashtra, Madras and Andhra Pradesh has been found to be 0·59 lbs., 0·50 lbs., and 0·49 lbs. respectively. Kerala, though a producing State, has a lower per capita consumption amounting to only 0·39 lbs. The per capita consumption in other States is smaller and amounts to 0·35 lbs.

CHAPTER III

PRICES

A. Units of Price Quotation

Turmeric, by and large, is sold by weight. In some producing areas of Madras State, small quantities of green or raw turmeric are, however, sold by volume.

The customary units adopted for quoting turmeric prices in the different markets in India are given in table 24.

TABLE 24

Unit of price quotation for turmeric in important markets in India

State	Market	Units of price quotation	
		Wholesale	Retail
Andhra Pradesh	Duggirala	Candy of 500 lbs.	Seer
	Cuddapah	Candy of 500 lbs.	Seer
	Nizamabad	Palla of 120 seers.	Seer
	Rajahmundry	Maund of 25 lbs.	Seer
Maharashtra	Bombay	Quintal	Kilogram or pound.
	Nagpur	Quintal	Kilogram or seer
	Kolhapur	Quintal	Kilogram or seer
	Sangli	Quintal	Kilogram or seer
	Tasgaon	Quintal	Seer.
	Karad	Quintal	Kilogram or seer
Orissa	Cuttack	Quintal	Seer
	Berhampur	Quintal	Kilogram or seer
	Parlekemedi	Mudange of 25 lbs.	Seer
	Tikabali	Pattu of 56 lbs.	Viss of 120 tolas
Madras	Madras city	Quintal	Kilogram
	Erode	Pothi or sattai of 280 lbs.	Viss of 3 lbs.
	Salem	Pothi or sattai of 280 lbs.	Viss of 3 lbs.
	Karur	Pothi or sattai of 280 lbs.	Viss of 3 lbs.
	Tiruchirapalli	Baram of 500 lbs.	Viss of 3 lbs.
	Madurai	Maund of 26 $\frac{3}{4}$ lbs.	Viss of 3 lbs.
Kerala	Cochin	Quintal	Pound
	Calicut	Candy of 700 lbs.	Pound
	Alleppey	Candy of 672 lbs.	Pound

In Andhra Pradesh, the unit of quotation in the wholesale transaction of turmeric is generally a 'putti' or 'candy' of 500 lbs. consisting of 20 local maunds of 25 lbs. each. In Telengana region, prices are quoted per 'palla' of 120 seers or 3 standard maunds.

In Maharashtra State the metric unit of weights has more or less been adopted both in the wholesale and retail trade. Rupees per quintal in wholesale trade and rupees per kilogram in retail sales are the units now in practice. Some retailers, however, are still following the old unit of "seer".

In the wholesale markets of Berhampur and Cuttack in Orissa State, turmeric prices are now quoted per quintal. Local units of "pattu" of 56 lbs. in Khond agency tract and "mudange" of 25 lbs. in Savara agency tract are also common. For retail sale, a "viss" of 120 "tolas" is adopted.

In Madras State, prices are quoted per "pothi" or "sattai" of 280 lbs. in the important turmeric markets of Erode and Salem, per "baram" of 500 lbs. in Tiruchirapalli and per "maund" of $26\frac{3}{4}$ lbs. in the distributing market of Madurai. The metric unit of quintal is followed in Madras city and for inter-State trade. Throughout the State, the retail sale is by weight and the price is quoted for a "viss" of about 3 lbs.

In Kerala, prices for the export trade are quoted in rupees per quintal. However, in internal trade, the unit of quotation is a "candy" comprising 700 lbs. in Calicut and 6 cwts. in Cochin and Alleppey.

In the important distributing markets like Calcutta, Delhi and Amritsar, wholesale prices are quoted per standard maund of 82 lbs. and this is being replaced by quintal. In retail trade 'seer' and 'kilogram' are the units of price quotation but 'seer' is still commonly followed.

For trade with foreign countries, the prices are quoted in cents per pound in respect of U.S.A. and shillings per cwt. in respect of U.K. The trade with Middle Eastern countries is mostly on the basis of rupees per pound.

B. Trend of Prices

A systematic study of price trends relating to a commodity presupposes the availability of exhaustive price data over a sufficiently long period of time. In the absence of such data, the analysis of prices and price comparisons become extremely difficult. Agricultural commodities, grown as they are under varying conditions of soil, climate and cultural practices, exhibit fairly wide variations in quality. Turmeric is no exception to this and striking quality differences exist between the produce of different regions. Owing to lack of standardisation and absence of well recognised grades differentiating turmeric grown in different regions, study of price differentials also becomes difficult and unrealistic.

With the available data collected during this survey, it is only possible to indicate, in a general way, the trend of seasonal and annual variations in prices of some of the important commercial qualities of turmeric produced in the country.

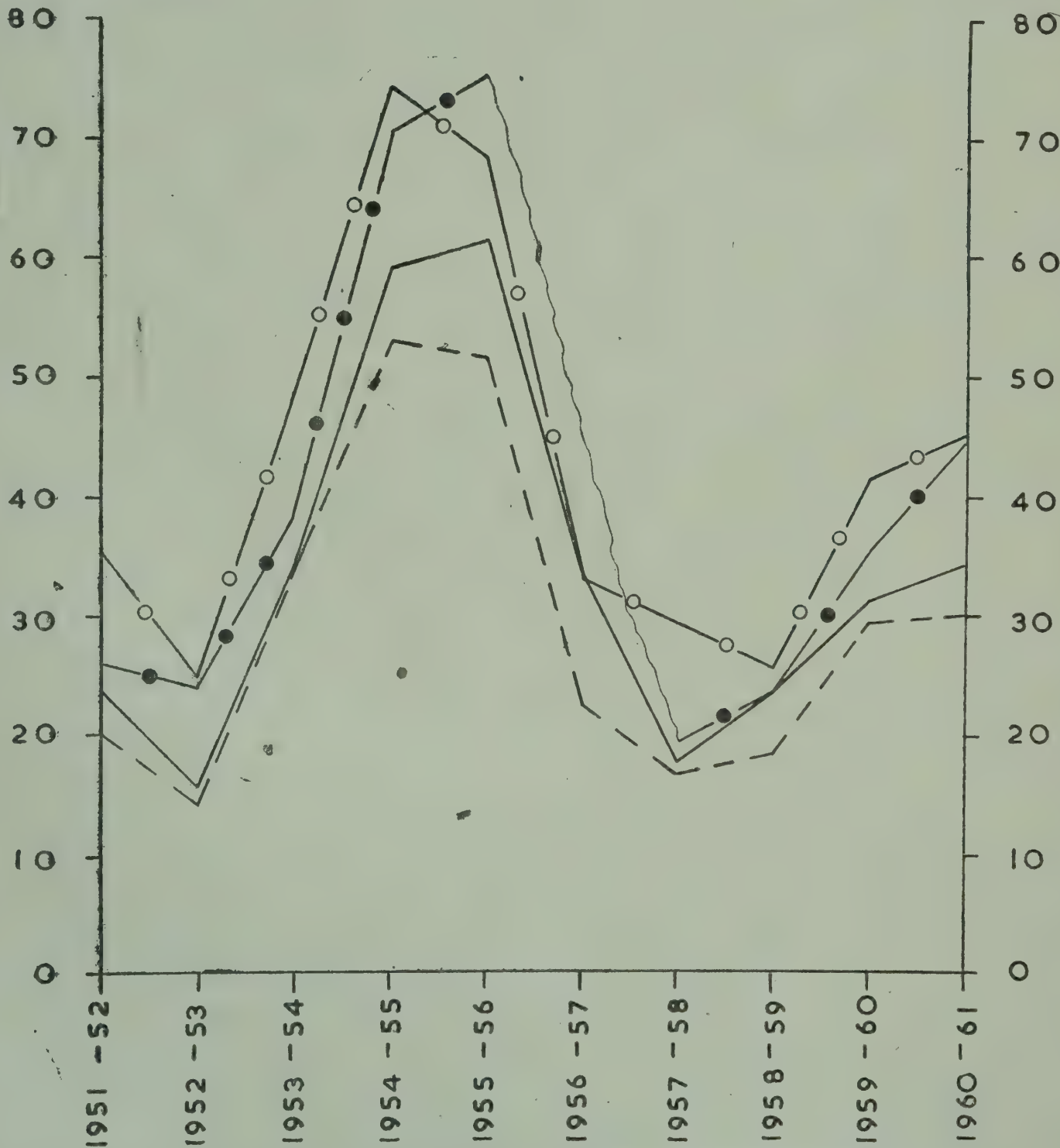
AVERAGE ANNUAL WHOLESALE PRICES OF TURMERIC IN IMPORTANT MARKETS IN INDIA.

REFERENCES

SANGLI	—————
DUGGIRALA	- - - - -
CAN CUTTA	—○—○—
AMRITSAR	—●—●—

RUPEES PER
STANDARD MAUND

RUPEES PER
STANDARD MAUND



The trend of turmeric prices in India has, therefore, been discussed below on the basis of the data collected from the two assembling markets of Sangli and Duggirala and the two distributing markets of Calcutta and Amritsar.

The annual wholesale prices of turmeric in these four markets during the years 1951-52 to 1960-61 are given in the following table. These prices are also illustrated in the graph facing page 39.

TABLE 25

Average annual wholesale prices of turmeric in Sangli, Duggirala, Amritsar and Calcutta markets (1951-52 to 1960-61)

(Base: 1951-52=100)

(Price per standard maund)

Year	Sangli (Rajapuri)		Duggirala		Calcutta (Erode quality)		Amritsar	
	Price	Price relatives	Price	Price relatives	Price	Price relatives	Price	Price relatives
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
	Rs. P.		Rs. P.		Rs. P.		Rs. P.	
1951-52 .	23.65	100.00	20.02	100.00	35.36	100.00	26.04	100.00
1952-53 .	15.46	65.37	14.09	70.38	24.88	70.36	24.01	92.20
1953-54 .	34.14	144.36	34.01	169.88	48.34	136.71	38.48	147.77
1954-55 .	59.15	250.10	53.16	265.53	74.67	211.17	70.81	271.93
1955-56 .	61.69	260.85	51.89	259.19	68.81	194.60	75.44	189.71
1956-57 .	33.52	141.73	22.53	112.54	33.08	93.55	N.R.	N.R.
1957-58 .	17.58	74.33	16.55	82.67	20.36	57.58	19.21	73.77
1958-59 .	23.65	100.00	18.59	92.86	25.62	72.45	23.74	91.17
1959-60 .	31.25	132.14	29.44	147.05	41.67	117.85	35.44	136.10
1960-61 .	34.21	144.82	30.95	154.60	45.18	127.77	44.26	169.97

During 1951-52, the year of the commencement of the First Five Year Plan, turmeric prices in the markets of Duggirala, Sangli, Amritsar and Calcutta stood at Rs. 20·02, Rs. 23·65, Rs. 26·04 and Rs. 35·36 per maund respectively. There was a fall in the prices in all these markets during the next year. This decline in price level was, in fact, a continuation of the fall in turmeric prices in India that commenced from the year 1950-51.

From 1953-54, turmeric prices showed an upward trend. This was mainly due to low production of the commodity within the country and increased demand for it from the foreign buyers. The upward trend in prices continued during 1954-55 when it touched the all-time peak level. As compared to the base year 1951-52, the prices during 1954-55 were higher by as much as 111·2 per cent in Calcutta, 150·1 per cent in Sangli, 165·5 per cent in Duggirala and 171·9 per cent in Amritsar. The prices remained more or less at the same high levels during 1955-56 also.

Stimulated by these high price levels, there was over-production of turmeric within the country and also accumulation of unsold stocks since then. There was also a fall in demand from importing countries as a consequence of which the prices began to decline from 1956-57. This decline continued and reached the lowest level in all these markets during 1957-58. The percentage decrease in prices during 1957-58 over the base year amounted to as much as 42·4 per cent in Calcutta, 25·7 per cent in Sangli, 17·3 per cent in Duggirala and 26·2 per cent in Amritsar. The position however improved during the next year and once again the prices started rising the upward trend continuing upto 1960-61.

The trend of prices was uniform in all these four markets throughout the ten-year period from 1951-52 to 1960-61. The prices in the two distributing markets have been higher than those of the assembling markets and these have generally moved in sympathy. An increase in turmeric prices by as much as 171·9 per cent followed by a decrease of 42·4 per cent during a short period of ten years clearly shows that the prices of this commodity are not very stable. The instability is mainly due to the fact that this is an essential article of human consumption for which the demand is inelastic while the Indian supply position is liable to vary considerably from year to year.

C. Comparison of Prices in Assembling and Distributing Markets

Normally, the prices of any commodity in the distributing markets rule higher than the prevailing prices in the assembling markets in order to cover the costs of transportation from the assembling to the distributing market, the market charges at the distributing end and also the margin of profit of the distributing agency.

Average annual prices of four different qualities of turmeric in assembling and distributing markets during the years 1956-57 to 1960-61 are compared in Appendix XVIII and are also summarised below :

TABLE 26

Annual wholesale prices of turmeric in assembling and distributing markets

(Average of 1956-57 to 1960-61)

(Rupees per standard maund)

Commercial quality	Prices at the assembling market		Prices at the distributing market		Increase in the distributing market price over the price at assembling market	
	Name of the market	Price	Name of the market	Price	Actual	Percentage
		Rs. P.		Rs.P.	Rs. P.	
Rajapuri . . .	Sangli	28·04	Bombay	30·02	1·98	7·1
Cuddapah . . .	Cuddapah	22·75	Calcutta	31·42	8·67	38·1
Erode	Erode	28·41	Madras	30·71	2·30	8·1
Berhampur. . .	Berhampur	26·03	Cuttack	29·62	3·59	13·8

It can be seen from Appendix XVIII that the prices of all the four commercial qualities of turmeric ruled higher in the distributing markets during all the years. The above table also indicates that, on an average, the increase in price in the distributing markets over that of the assembling markets was the lowest between Bombay and Sangli and amounted to only Rs. 1·98 per standard maund or 7·1%. The difference was more or less the same between Madras and Erode. The low marginal differences in respect of these markets are explained by the comparative nearness of these assembling and distributing markets.

Between the assembling market at Berhampur and the distributing centre at Cuttack, however, the price difference was much higher and amounted to Rs. 3·59 per standard maund or 13·8%. This was due to the fact that the produce has generally to move from Berhampur to Cuttack by road and involves high transportation costs. The highest price difference of Rs. 8·67 per standard maund or 38·1% between the distributing and assembling markets was noticed in respect of Calcutta and Cuddapah. This is also accounted for by the longer distance through which the produce has to be transported and by the comparatively high market charges at Calcutta.

D. Variation in Prices due to Quality in Different Markets

There are as many as sixteen recognised commercial qualities in the turmeric trade. The quality factors for each of these are not, however, well defined. Though certain quality factors such as length and thickness, colour of the core and wastage during polishing are often spoken of in the turmeric trade, these physical characteristics

have to be assessed merely by visual examination. As such, the concept of quality is capable of being interpreted differently in different parts of the country and the prices of various commercial qualities are bound to vary.

The average annual wholesale prices of some of the important commercial qualities of turmeric in the assembling markets nearest to their respective centres of production are compared below:

TABLE 27

Comparison of prices of different commercial qualities of turmeric

(Rupees per standard maund)

Sl. No.	Commercial quality	Assembling market	Average annual wholesale price (1956-57 to 1960-61)
			Rs.P.
1.	Nizamabad	Nizamabad	18.66
2.	Cuddapah	Cuddapah	22.75
3.	Duggirala	Duggirala	23.61
4.	Alleppey	Cochin	26.13
5.	Rajapuri	Sangli	28.04
6.	Erode	Erode	28.41

E. Variation in Prices due to Quality in the Same Market

The price relationship between different commercial qualities is more realistic if their prices are compared in any one market. The monthly average prices during 1960-61 of Rajapuri, Cuddapah and Duggirala qualities at Sangli and Bombay markets and of Madras and Erode qualities at Calcutta market are, therefore, compared in the following table:

TABLE 28

Comparison of prices of different qualities of turmeric at the same market (1960-61)

(Rupees per standard maund)

Month during 1960-61	Sangli			Bombay			Calcutta	
	Rajapuri	Cuddapah	Duggirala	Rajapuri	Cuddapah	Duggirala	Madras	Erode
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
	Rs. P.	Rs. P.	Rs. P.	Rs. P.	Rs. P.	Rs. P.	Rs. P.	Rs. P.
April	33.95	29.95	30.14	36.08	34.79	36.72	35.40	41.80
May	35.43	31.43	31.43	37.90	35.36	37.86	35.75	42.00
June	35.18	31.18	31.18	37.55	34.27	37.54	35.00	40.50

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
	Rs. P.	Rs. P.	Rs. P.	Rs. P.	Rs. P.	Rs. P.	Rs. P.	Rs. P.
July . . .	37.14	33.54	33.54	38.95	37.66	40.00	37.00	43.20
August . . .	36.74	32.74	32.74	38.82	39.11	39.26	40.00	46.00
September . . .	36.25	32.24	32.24	38.22	38.93	38.68	39.40	46.20
October . . .	32.92	28.94	28.94	36.58	36.95	37.77	38.00	47.25
November . . .	32.87	29.69	29.69	36.07	35.27	37.14	38.25	47.25
December . . .	33.35	33.15	33.40	37.40	36.91	39.15	35.40	47.00
January . . .	31.83	32.12	32.37	36.58	36.39	37.51	N.A.	N.A.
February . . .	32.19	31.87	32.44	36.34	35.83	37.93	N.A.	N.A.
March . . .	33.81	34.34	33.81	37.32	36.01	38.03	N.A.	N.A.
Average . . .	34.31	31.77	31.83	37.32	36.46	38.13	37.13	44.58

At Sangli market, Rajapuri quality is at a premium and fetched a higher price throughout the year as compared to Cuddapah and Duggirala qualities. The prices of Cuddapah and Duggirala qualities ruled more or less at par with each other throughout the year. During 1960-61, the annual average prices for Rajapuri, Duggirala and Cuddapah qualities at Sangli market were Rs. 34.31, Rs. 31.83 and Rs. 31.77 per standard maund respectively. On an average Rajapuri fetched a premium of about Rs. 2.50 P. per maund.

The position was somewhat different in Bombay market. Duggirala quality fetched the highest price throughout the year except during May and June, 1960, when Rajapuri quality fetched the highest. The prices of Cuddapah quality were, however, the lowest throughout the year. During the year 1960-61, the annual average prices of Duggirala, Rajapuri and Cuddapah qualities in Bombay were Rs. 38.13, Rs. 37.32 and Rs. 36.46 per maund respectively. In the distributing market of Bombay, all these three qualities are marketed in the polished form. It is significant to note that the differences between the prices of these three qualities in Bombay market were less than a rupee as against a difference of about Rs. 2.50 in Sangli.

In Calcutta market, the price of Erode quality of turmeric was sold at a premium of Rs. 7.45 over that of Madras quality.

F. Comparison of Prices of 'Bulbs' and 'Fingers'

As already indicated, turmeric is marketed in two forms, bulbs and fingers. Comparable price data for turmeric bulbs and fingers are not available for most of the markets as the produce generally arrives from the producing areas in the mixed form. In Madras State, however, bulbs and fingers are separately brought for sale.

Monthly prices of turmeric bulbs and fingers in Erode and Tiruchirapalli markets during the years 1956-57 to 1960-61 are given in Appendices XV and XVI and are also summarised below:

TABLE 29

Comparison of prices of Turmeric bulbs and fingers in Erode and Tiruchirapalli markets

(Average annual prices : 1956-57 to 1960-61)

(Rupees per standard maund)

Year	Tiruchirapalli market			Erode market		
	Fingers	Bulbs	Increase over bulbs	Fingers	Bulbs	Increase over bulbs
	Rs. P.	Rs. P.	Rs. P.	Rs. P.	Rs. P.	Rs. P.
1956-57 . . .	24.83	20.17	4.66	26.53	20.38	6.15
1957-58 . . .	14.70	11.33	3.37	16.53	12.15	4.38
1958-59 . . .	21.47	14.52	6.95	21.36	15.67	5.69
1959-60 . . .	37.94	23.76	14.18	38.93	29.51	9.42
1960-61 . . .	40.53	40.26	0.27	38.68	32.60	6.08
Average . . .	27.89	22.00	5.89	28.41	22.06	6.35

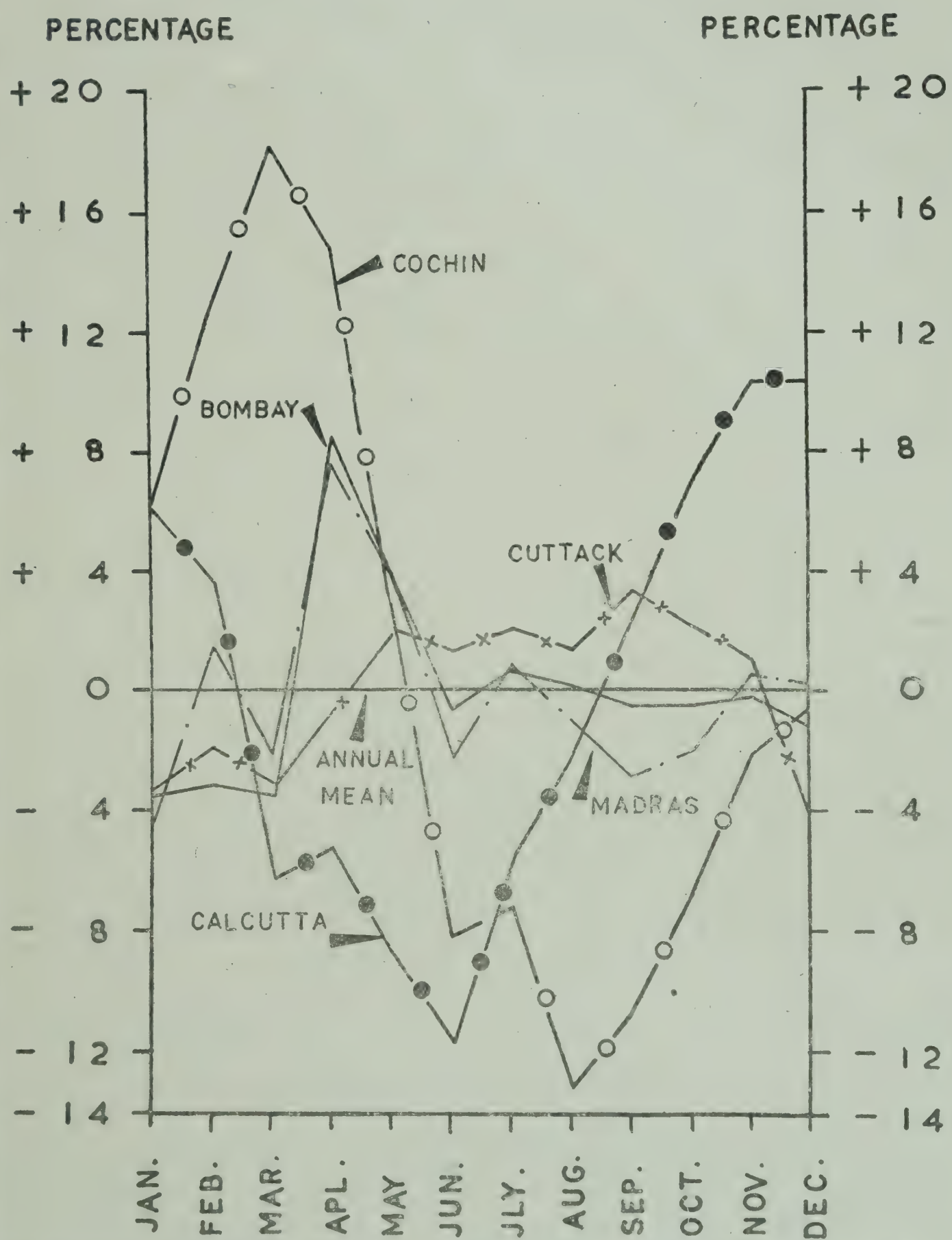
It will be seen from the above table that fingers always fetched a premium over bulbs in both these markets during all the five years. A wide variation was, however, noticed in the amount of premium enjoyed by the fingers over the bulbs during the different years. In Tiruchirapalli market the difference per standard maund varied from 0.27 P. in 1960-61 to as much as Rs. 14.18 during 1959-60, the average of the five years amounting to Rs. 5.89. In Erode market, the difference ranged from Rs. 4.38 during 1957-58 to Rs. 9.42 during 1959-60, the average being Rs. 6.35. This clearly shows that although finger turmeric is always sold at a higher price, the premium obtained in any season is largely influenced by many other economic factors such as the seasonal supply and demand.

In other States also, finger turmeric normally fetches a premium of Rs. 3 to Rs. 7 per standard maund over bulb turmeric.

G. Seasonal Variations

As in the case of other agricultural commodities, the prices of turmeric also are subject to considerable seasonal variations. This can be clearly seen from Table 30 which shows the percentage deviation of the average monthly wholesale prices of turmeric from their annual mean in a few selected assembling and distributing markets during 1951-52 to 1960-61 and also from the graphs facing pages 44 and 45 respectively.

PERCENTAGE DEVIATION OF THE AVERAGE MONTHLY WHOLESALE PRICES OF TURMERIC FROM THEIR ANNUAL MEAN IN IMPORTANT DISTRIBUTING MARKETS.



PERCENTAGE DEVIATION OF THE AVERAGE MONTHLY WHOLESALE PRICES OF TURMERIC FROM THEIR ANNUAL MEAN IN IMPORTANT ASSEMBLING MARKETS.

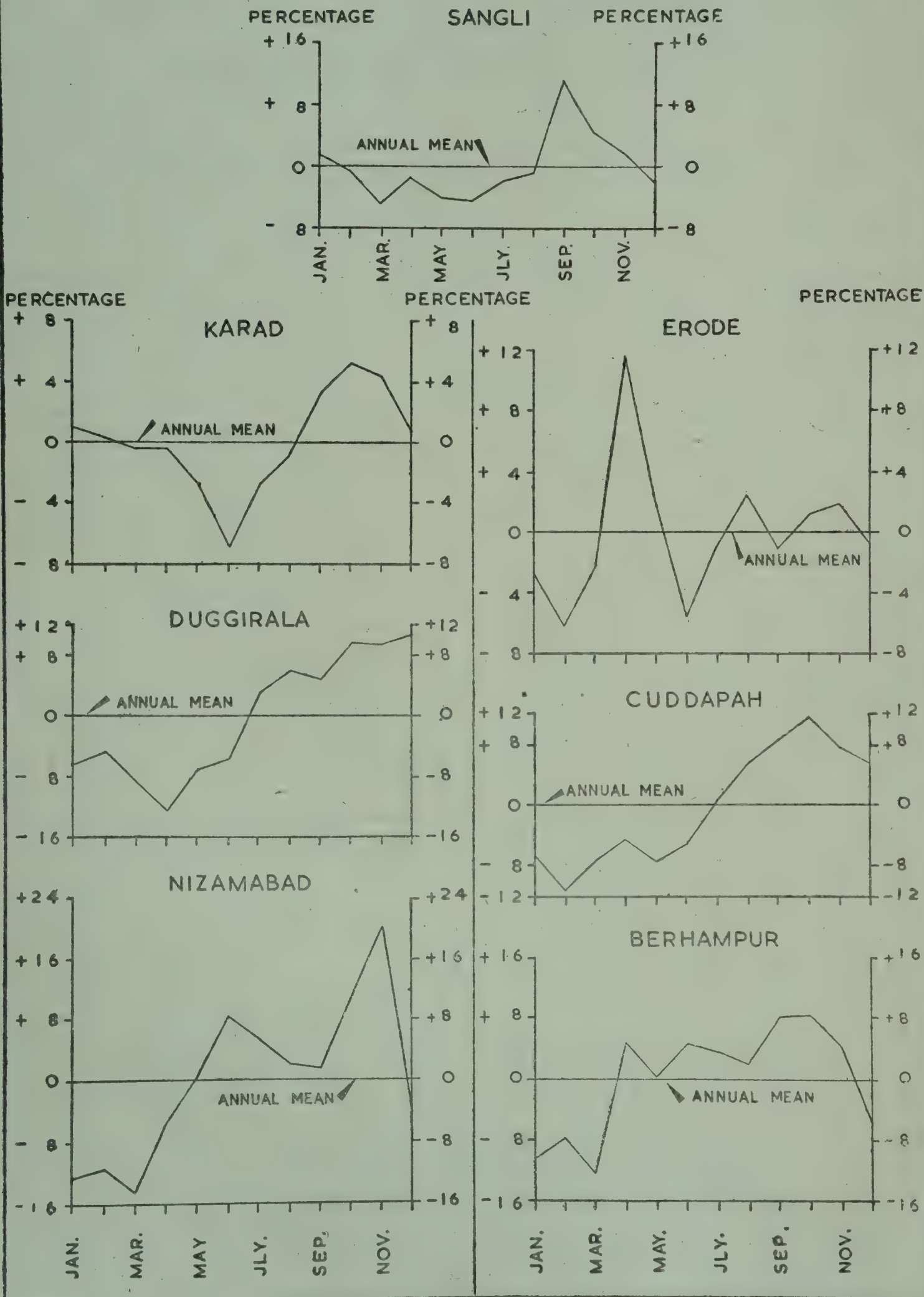


TABLE 30

Percentage deviation of the average monthly wholesale prices of turmeric from their annual mean
(Average 1951-52 to 1960-61)

	Annual average price	January	February	March	April	May	June	July	August	Septem- ber	Octo- ber	Novem- ber	Decem- ber
Assembling Markets :													
	Rs. P.												
Sangli	33.43	+1.8	-0.4	-4.8	-1.2	-4.0	-4.4	-1.9	-0.9	+11.5	+4.5	+1.8	-2.0
Karad	33.54	+0.1	+0.4	-0.4	-0.4	-2.6	-6.9	-2.9	-0.8	+3.3	+5.2	+4.3	+0.7
Erode	28.41	-2.6	-6.1	-2.4	+11.6	+2.0	-5.5	-0.8	+2.5	-1.0	+1.2	+1.9	-0.8
Duggirala	29.12	-6.1	-4.6	-8.4	-12.4	-6.9	-5.5	+3.1	+6.0	+4.9	+9.7	+9.4	+10.8
Cuddapah	30.91	-6.3	-11.0	-7.1	-4.3	-7.3	-4.9	+0.9	+5.8	+8.8	+11.7	+7.9	+5.8
Nizamabad	24.51	-12.4	-11.2	-14.3	-5.4	+0.3	+8.3	+5.5	+2.1	+1.6	+10.9	+20.0	-5.4
Berhampur	30.75	-10.4	-7.8	-12.2	+4.7	+0.2	+4.6	+3.7	+2.0	+8.1	+8.5	+4.4	-5.8
Distributing Markets :													
Bombay	35.97	-3.5	-3.1	-3.5	+8.7	+3.3	-0.6	+0.7	+0.1	-0.5	-0.5	+0.1	-1.2
Madras	34.24	-4.5	+1.6	-2.1	+7.7	+3.8	-2.2	+0.9	-1.0	-2.9	-2.0	+0.5	+0.2
Cochin	32.97	+6.2	+12.8	+18.2	+14.9	+2.6	-8.3	-7.2	-13.2	-10.6	-6.7	-2.1	-6.6
Calcutta	41.80	+6.1	+3.7	-6.4	-5.3	-8.7	-11.7	-5.6	-2.2	+2.3	+7.0	+10.4	+10.4
Cuttack	39.90	-3.4	-1.9	-3.1	-0.7	+2.1	+1.3	+2.1	+1.4	+3.4	+2.2	+1.1	-4.5
		January	Febru- ary	March	April	May	June	July	August	Septem- ber	Octo- ber	Novem- ber	Decem- ber

(The underlined months indicate the period of peak arrivals in the assembling markets.)

The average monthly prices of turmeric in the assembling markets were generally low during the months of March to June—the period of peak arrivals in the assembling centres. The percentage deviation during these months from their annual mean prices ranged from -1.2 to -4.8 in Sangli market, -0.4 to -6.9 in Karad, -5.5 to -12.4 in Duggirala, and -4.3 to -7.3 in Cuddapah market. The prices during these four months are generally low as this period corresponds to the peak period of arrivals in these assembling markets.

In Cuddapah, Nizamabad and Berhampur markets, the arrivals are earlier and hence the prices start ruling low even from January. The monthly variation in prices ruling in Nizamabad market during the months of January to March indicates wide variations from their annual mean and amounted to as much as -12.4 per cent to -14.3 per cent. In this market, the produce arriving during these months contains high percentage of moisture and is therefore of low quality which accounts for the very low prices

In the assembling market of Erode, however, there is some peculiarity in the seasonality of prices. Although the arrivals are heavy during the month of April, the monthly average prices during this month ruled high by as much as 11.6 per cent over the annual mean. This peculiarity is explained by the fact that Erode, apart from being an assembling market, is also a centre from where appreciable quantities of turmeric are directly exported during this month to Ceylon, Singapore, Malaya, etc., through the ports of Madras, Tuticorin and Nagapattinam.

September to November being off season months, the prices during this period ruled high in most of the assembling markets as compared to their annual mean price. The percentage deviation during these months varied from $+1.8$ to $+11.5$ in Sangli, $+3.3$ to $+5.2$ in Karad, $+4.9$ to $+9.7$ in Duggirala, and $+4.4$ to $+8.5$ in Berhampur. In Cuddapah and Nizamabad, however the variation in prices was more pronounced and ranged from $+7.9$ per cent to $+11.7$ per cent and $+1.6$ per cent to $+20.0$ per cent respectively. The seasonal variation in Erode market during this period is not significant.

In the port towns of Bombay and Madras, the prices usually rule high during the months of April and May when bulk of the exports takes place. In Bombay market the monthly deviation in prices from their annual mean varied from $+8.7$ per cent in April to $+3.3$ per cent in May and in Madras from $+7.7$ per cent in April to $+3.8$ per cent in May. During the other months of the year, no appreciable variations in the prices are noticed in these markets.

In Cochin market, there was considerable deviation in the monthly average prices during the period from January to April. Though this was the peak period of arrivals, the prices during this period were high as compared to their annual average price and amounted to 6.2 per cent in January and 14.9 per cent in April. After April,

there was a sudden fall in prices which continued during the rest of the year. This was also an unusual seasonality and might be explained by the fact that the Alleppey finger quality arriving in this market is used for export and the shipment is completed during this period and there is no sale of this quality of turmeric at this centre after this period.

In the distributing market of Calcutta, two distinct seasons are noticeable in turmeric prices, one from March to June when prices rule low and another from October to December when the prices are high. The heavy flow of supplies into this market from various assembling markets during the months of March to June and the usually heavy demand for turmeric during the festival months of October to December respectively explain the low and high prices of turmeric during the above two periods.

In the distributing market of Cuttack, no significant deviation in the monthly prices from their annual mean was noticed.

It is thus seen that in the assembling markets, prices usually rule low during the period of two to four months following the harvest of the crop with a tendency to rule high during the lean months. In the centres of exports, the price is generally high during the months when bulk of the exports takes place. In distributing markets, prices are always high during the festival months of October to December.

The low level of prices prevailing during the beginning of the season is a matter of serious consequence to producers. The need for immediate cash coupled with the lack of proper and adequate storage facilities forces the majority of the growers to dispose of their entire production soon after the harvest. They are thus unable to take the benefit of the high prices prevailing during the lean season. The Central and State Warehousing Corporations working in the various assembling markets could, however, prevent many of the distress sales in these regions by providing credit and storage facilities to the local producers.

H. Comparison of Wholesale and Retail Prices

Retail sale of turmeric is generally in small quantities and no record is maintained of the retail prices. Further, the form in which turmeric is ultimately sold in retail is different from that in which it is generally sold in the assembling markets. These limitations make comparison of wholesale and retail prices difficult. However, some comparison has been made on the basis of data collected from Cuddapah and Hyderabad markets in Andhra Pradesh and is given in Table 31.

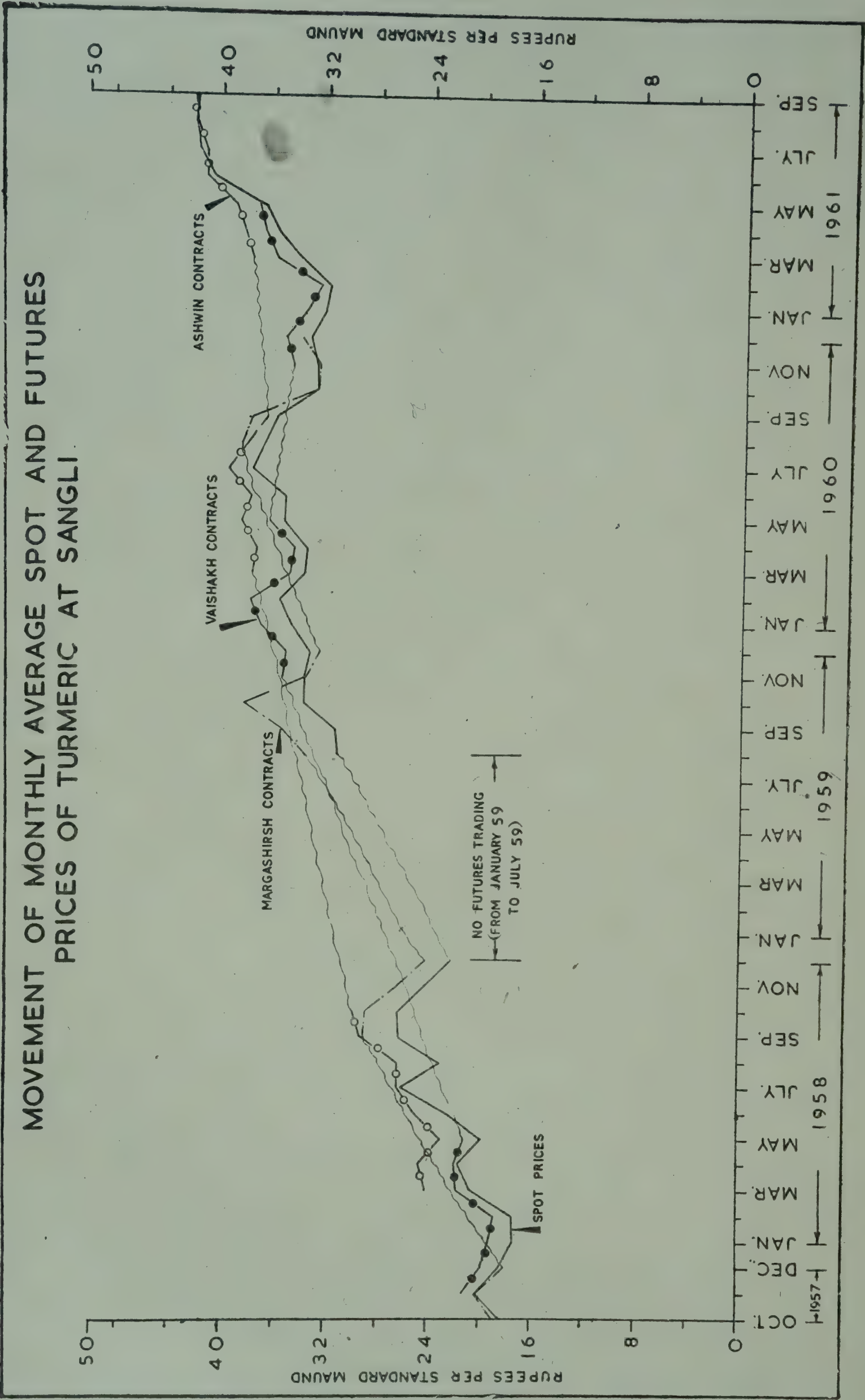
TABLE 31

Comparison of wholesale and retail prices of turmeric in Cuddapah and Hyderabad Markets during 1960-61

(Rupees per standard maund)

Months	Cuddapah				Hyderabad			
	Wholesale price	Retail price	Increase over whole-sale price		Wholesale price	Retail price	Increase over whole-sale price	
			Actual	Percentage			Actual	Percentage
	Rs. P.	Rs. P.	Rs. P.	Rs. P.	Rs. P.	Rs. P.	Rs. P.	Rs. P.
April, 1960	.	26.73	1.27	4.8	34.54	40.00	5.46	15.8
May, 1960	.	27.15	0.85	3.1	36.50	40.00	3.50	9.6
June, 1960	.	28.36	0.04	0.1	39.55	40.00	0.45	1.1
July, 1960	.	33.82	1.78	5.3	41.20	43.31	2.11	5.1
August, 1960	.	35.60	0.80	2.2	40.00	43.90	3.90	9.8
September, 1960	.	34.96	0.24	0.7	40.00	43.82	3.82	9.6
October, 1960	.	32.87	1.13	3.4	34.84	40.00	5.16	14.8
November, 1960	.	31.68	0.72	2.3	39.45	40.00	0.55	1.4
December, 1960	.	31.50	1.30	4.1	39.48	43.20	3.72	9.4
January, 1961	.	31.27	2.73	8.7	38.63	40.00	1.37	3.5
February, 1961	.	33.94	0.46	1.4	34.84	40.00	5.16	14.8
March, 1961	.	29.13	3.27	11.2	33.97	40.00	6.03	17.8
Average	•	31.42	1.21	3.9	37.75	41.19	3.44	9.1





The table shows that in Cuddapah market, the difference between the monthly average retail prices and the wholesale prices per maund varied from Rs. 0·04 or 0·1% in June to Rs. 3·27 or 11·2% in March, with an average of Rs. 1·21 or 3·9%. As compared to this, the increase in the retail prices was more in the case of Hyderabad which is a distributing market. The retail prices ruled on an average Rs. 3·44 more per standard maund over the wholesale prices. The minimum increase of Rs. 0·45 or 1·1% was noticed in the month of June while the maximum increase of Rs. 6·03 or 17·8% was noticed in the month of March. It could be said that the difference was higher in February, March and April.

It will be seen from the above table that the retail prices are more stable throughout the major part of the year and that the variation in the retail prices during the different months of the year is not as much pronounced as in the case of wholesale prices. The retailers usually try to keep the retail prices more or less at the same level throughout the year and their margin of profit is, therefore, the maximum during the period of heavy arrivals when the wholesale prices tend to be comparatively low as would be observed from the prices recorded at Hyderabad between February and April.

I. Futures Prices

Forward trading in turmeric was officially permitted in 1955 by the Forward Markets Commission. The Spices and Oil Seeds Exchange Limited, Sangli, was recognised for futures trading in turmeric under the Forward Contracts (Regulation) Act, 1952. This Exchange at Sangli is the only association in the country that has been recognised at present for futures trading in turmeric. It has adopted "Rajapuri" quality as the basis variety and quintal as the unit of quotation. Most of the qualities of turmeric grown in India are tenderable against the hedge contract laid down under the bye-laws of this Exchange. For trading in futures, the calendar of Samvat years is being followed. There are three contracts for delivery, namely, Margashirsh, Vaishakh and Ashwin. The exact dates for the commencement of these contracts are fixed every year by the Exchange. But generally speaking, the Margashirsh contract opens in the month of August-September and closes in December, the Vaishakh contract opens in November closing in May and the Ashwin contract opens in March-April and closes in September.

The average monthly spot and futures prices during the period from October 1957 to September 1961 are given in Appendix XIX.

Generally speaking, the spot and futures prices of turmeric do move in sympathy with each other. Under normal conditions, these two prices move up and down together except for isolated opposite movements depending on the individual situations in the two markets. This is clearly illustrated by the average monthly futures and spot prices at Sangli for the period from October 1957 to September 1961 given in Appendix XIX. This relationship is also brought out in the graph facing this page.

In futures trade, the movement of spot prices is not of so much importance as the relationship between the movement of spot and

futures prices. For those who hedge their transactions, a rise or fall in prices of turmeric is a matter of comparative indifference. Even the moving up and down together of the two prices alone is not of much significance to the hedger. It is the "spread", i.e., the difference between the spot and futures prices that is of significance to the hedger. During the period under study, there were not many irregular variations in the spread between the spot and futures prices of turmeric. The spread between the two prices within the life of any contract can be seen from Appendix XIX and also from the graph facing page 49. The following table gives the average spread between the spot and futures prices of turmeric from season to season and for each delivery of futures contract within the season.

TABLE 32
Average spread between spot and futures prices*

(Rupees per standard maund)

Season	Margashirsh contract	Vaishakh contract	Ashwin contract	Annual average
Samvat year 2014	0.3	1.2	2.8	1.4
Samvat year 2015	2.3	No futures trading		2.3
Samvat year 2016	2.4	1.6	2.5	2.2
Samvat year 2017	0.9	1.3	1.4	1.3

*Average spread is the ordinary arithmetic mean of the sum of absolute difference obtained by ignoring signs between spot and futures prices.

In analysing the spot and futures prices, the premium of the one over the other at different periods of the contracts is of special significance. Given the relation between the anticipated supply and demand for a commodity in future and its actual supply and demand at present, two sets of mutually conflicting influences seem to govern the spread between the spot and futures prices. These are: (1) the buyer's preference for spot commodities, and (2) the cost of carrying goods into future. On the one hand, a spot transaction has distinct advantages to the buyer over the futures purchase in that the buyer has the complete choice of the commodity he seeks to buy. This tends to put a premium over the spot prices. On the other hand, the "cost of carrying the goods" into future tends to put a premium over the "futures prices" as compared to the "spot prices". Thus, the actual direction and size of the spread between spot and futures prices at any particular time will depend on the result of these two mutually conflicting influences. In any near month of the contract, the carrying costs are almost nil. As such, in a properly balanced futures market, the spot price is likely to exceed the futures price in the near month by the amount of the buyer's preference for spot goods. In the distant months, the futures prices are expected to remain above the spot. It is also usual for the futures price of a distant contract to rule higher over that of a nearer contract during any given period. This general relationship between the spot and futures prices is true also of the futures trade in turmeric during the period under discussion as is clearly brought out from Appendix XIX and from the graph facing page 49. The only

case of exception was the Ashwin S.Y. 2014 contract during the currency of which the futures prices continued to maintain a premium of about Rs. 3.50 per standard maund over the spot prices right from the beginning of the contract in March, 1958, till the close of the contract in October, 1958. This was owing to the abnormal conditions that were prevailing in the futures trade during the close of this contract on account of heavy speculative tendencies which necessitated the adoption of stringent emergency measures by the Board of the Oilseeds Exchange.

(1) TENDERING DIFFERENCES

In forward trading, futures contracts are entered into in terms of a basis quality supposed to be representative of the commodity concerned and capable of influencing the prices of other varieties. Since delivery is generally not intended in forward trading, the contracts are made without reference to any specific quality. When delivery is insisted, it is made in terms of the basis quality or in terms of one of the different tenderable varieties specified by the body controlling forward trading.

As already stated, for forward trading in turmeric, the Spices and Oil Seeds Exchange at Sangli has fixed the Rajapuri quality as the "basis". Among the many qualities of turmeric grown in the country, Cuddapah, Duggirala, Nandyal, Kodur, Nizamabad, Erode and Salem are tenderable against the basis.

The Spices and Oil Seeds Exchange, Sangli, fixes under its bye-laws the tendering differences payable for different qualities of turmeric tendered against the basis quality for different seasons. For the purpose of fixing such differences, the Board of the Exchange appoints a special committee of persons representing all interests and actively connected with the spot market. The bye-law that provides for the fixation of tendering differences has been amended from time to time, and the tendering differences as fixed by the Exchange for the different contracts during the years S.Y. 2014, 2015 and 2016 are given in the following table:

TABLE 33

Tendering differences payable for tendering qualities against the basis quality of turmeric during the contract years (Samvat years 2014, 2015 and 2016)

Tenderable variety	Off allowances (in terms of percentages of the price of basis quality)		
	S.Y. 2014	S.Y. 2015	S.Y. 2016
(1) Cuddapah	15	15	12½
(2) Duggirala	3	3	3
(3) Nandyal	6¼	6¼	6¼
(4) Kodur—			
(i) Yellow	7½	7½	6¼
(ii) Green (mixed)	15	15	6¼
(5) Nizamabad	6¼	6¼	6¼
(6) Erode	3	3	3
(7) Salem	3	3	At par

It may be seen from the above table that the tendering differences for all the tenderable varieties except Salem were at a discount varying from 12½% in the case of Cuddapah quality to 3% in the case of Erode quality. During the present survey, the turmeric trade in Andhra Pradesh expressed dissatisfaction with the tendering differences fixed by the Exchange. Dealers in turmeric in this State are of the opinion that the tendering differences fixed for different qualities of turmeric, particularly in respect of Cuddapah quality produced in Andhra Pradesh, are on the high side and are unwarranted. The fixation of the premium and discount for different varieties over the price of the basis variety or the "tendering differences" in an equitable manner is no doubt a difficult problem. But in the interest of smooth functioning of turmeric trade in the country, the Forward Markets Commission should see how far the doubts and dissatisfaction of the trade in Andhra Pradesh, which has the largest share of turmeric production in India, could be reconciled.

The Exchange at Sangli appears to have fixed these tendering differences based on the rates for the different qualities of turmeric that prevailed in the producing and consuming centres during the previous season and other relevant circumstances. There are at present no standard grades for turmeric and the different quality factors are also not well defined. The Forward Markets Commission should thoroughly investigate this question of tendering differences in turmeric and consider the evolution of a method of fixing up this difference that will satisfy the trade from all parts of the country.

(2) REGULATION OF FUTURES PRICES

Futures trading, while extending much needed hedging facilities to the traders, is also capable of being misused. Constant vigilance is, therefore, necessary to prevent excessive speculation in forward markets and to introduce a measure of effective check on wild and unhealthy fluctuation in futures prices, particularly when they ignore the requirements in the matter of long term stability of prices.

During the first few years after the Spices and Oil Seeds Exchange was recognised for forward trading in turmeric there were instances of artificial rigging up of prices and also attempts to corner and squeeze the market. This necessitated the adoption by the Board of Exchange of remedial measures with a view to reducing violent fluctuations in prices and to eliminating other undesirable trends in the market, and the Board of Exchange resorted to certain remedial measures such as—

- (i) fixation of maximum and minimum prices,
- (ii) enforcement of special margins or additional deposits, and
- (iii) suspension of futures trade in turmeric.

During the currency of the Margashirsh S.Y. 2015 contract of turmeric, there was a situation akin to emergency in the market arising out of the critical price situation during the closing period of the previous contract. The Forward Markets Commission, Bombay,

therefore, had to impose certain restrictions and this contract was in force subject to the ceiling and floor rates of Rs. 34 and Rs. 24 per standard maund respectively.

As a result of unusual market situations, the enforcement of special margins or the system of additional deposits became necessary during different contracts. Under this system the members are required to deposit an amount at the rate or rates specified by the Exchange (1) on their "Net Open Short Position" if the closing forward rates of the said contracts are quoted below a specified limit, or (2) on their "Net Open Long Position" if the closing forward rates of the said contract are quoted above a specified limit. The rates of ordinary and special margins of deposit that were in force during the different contracts during the seasons under discussion are given in Appendix XX.

In addition to the above two regulatory measures, the futures trade in turmeric had also to be suspended for a period of about nine months after the termination of the Margashirsh S.Y. 2015 contract. Owing to the emergency conditions that prevailed in the market during the currency of the above mentioned contract, the Board of Exchange at Sangli thought it advisable to permit futures trading in turmeric only after effecting necessary amendments in the bye-laws of the Exchange.

J. Factors influencing Prices

The price of any commodity is generally determined by its demand and supply. So far as turmeric is concerned, it has already been pointed out that its demand within the country is highly inelastic under the existing pattern of utilisation. As such it is the demand for exports that ultimately decides the total demand for turmeric in the country. As a direct consequence, the exports of turmeric have come to exert considerable influence over the turmeric prices within the country. During periods of heavy exports, the prices of turmeric have ruled high within the country while a reduction in exports have tended to depress the internal prices.

The supplies of turmeric are characterised by two factors: (i) several months elapse from the time of planting to the time of harvest and the addition to supply occurs but once a year, and (ii) the quantum of supplies is liable to wide fluctuations from year to year. Thus, in the case of turmeric, the demand being fairly constant and inelastic, changes in supply are rather more important and accounts for major price variations. It has been pointed out in an earlier chapter on Indian Supplies how over-production of turmeric during 1955-56 resulted in bringing down the turmeric prices within the country.

In a commodity like turmeric, the production of which is concentrated in specific areas and the demand for which is widespread throughout the country, the ruling prices in important distributing markets like Bombay and Calcutta seem to have profound influence in determining the prices in the assembling centres.

The prevailing conditions in the futures market also have some influence on the spot prices. In a well balanced futures market, the trading in futures introduces an element of stability in the trend of prices by smoothening out rapid and violent fluctuations. However, as happened during the early years of functioning of the Exchange at Sangli, the futures prices are sometimes capable of being manipulated by unscrupulous speculators to serve their own interests and at such periods when the futures prices are worked up to artificially high or low levels, the spot prices also have a tendency to be influenced by this artificial level of futures prices.

Other factors that may influence turmeric prices to a lesser or greater extent include the general level of commodity prices, cost of production, quality factors and political developments.

K. Market Intelligence

A well organised system of marketing is not complete without adequate arrangements for the dissemination of reliable market information on supply and demand, market trends, prices, etc. The utility of such information to the traders and the producers is well known. The present system of market intelligence and price reporting, insofar as turmeric is concerned, indicates much scope for improvement.

The present survey reveals that in general the traders keep themselves well informed about the market conditions prevailing in different parts of the country but the same cannot be said in case of the growers.

The regulated markets in the States of Andhra Pradesh, Maharashtra and Orissa keep records about the daily arrivals, prices, etc., regarding turmeric. This information is also displayed on notice boards and sometimes announced through loudspeakers in the market yard. Some of the well organised private markets also, like the one at Erode, maintain and display such information.

All India Radio stations at Bombay, Nagpur, Tiruchirapalli and Hyderabad broadcast daily and weekly prices of turmeric.

All the important newspapers, both vernacular and English, publish daily or weekly prices of turmeric in their commercial columns. Quite a few trade papers also give spot and futures prices of turmeric along with brief reviews of the market situations.

The Chamber of Commerce at Cochin and few other trade bodies maintain regular records of prices of turmeric in their respective markets. The Spices and Oil Seeds Exchange at Sangli issues a Fortnightly Market Bulletin presenting all statistical and commercial information regarding turmeric. There are also private agencies and firms who issue periodical market reports and price quotations. Some are compiled for sale while others are sent to clients free of charge.

Among the publications of the State Governments, the price bulletins published by the States of West Bengal, Orissa, Bombay, Punjab and others contain weekly wholesale prices of turmeric. In

Madras State, turmeric prices for a few qualities are published in the Fort St. George Gazette. The Forward Markets Bulletin issued by the Forward Markets Commission, Bombay, contains futures prices of turmeric and also spot prices in Bombay market for a few varieties.

The Bulletin of Agricultural Prices (Weekly), Farm (Harvest) Prices of Principal Crops (Annual), and Agricultural Prices in India (Annual), all published by the Directorate of Economics and Statistics, Ministry of Food and Agriculture, give information about prices of turmeric in selected markets.

The information on price available from these various sources is, however, of limited utility. Turmeric is marketed in different forms—bulbs and fingers and polished and unpolished. The quality of the produce also differs from place to place. As such, to be really useful, the price quotations should clearly specify the quality to which it refers. Sometimes turmeric prices are quoted for “desi” or “country” varieties. Such vague terms convey no sense but only confuses the public. The absence of standard grades and uniform price quotations adds to the difficulty of correctly interpreting the information on turmeric prices. The need for a more scientific system of price reporting in respect of this commodity is thus obvious.

CHAPTER IV

PREPARATION FOR THE MARKET

Turmeric, as harvested from the field, is in the green raw form. It is preserved in the same form for seed. In some areas, small quantities are also marketed in the raw form. Bulk of the crop, however, leaves the producers only after various curing and processing operations. These preparations for the market, commencing with the harvesting of the crop, are discussed in detail in the following pages.

A. Harvesting

(1) SEASONS

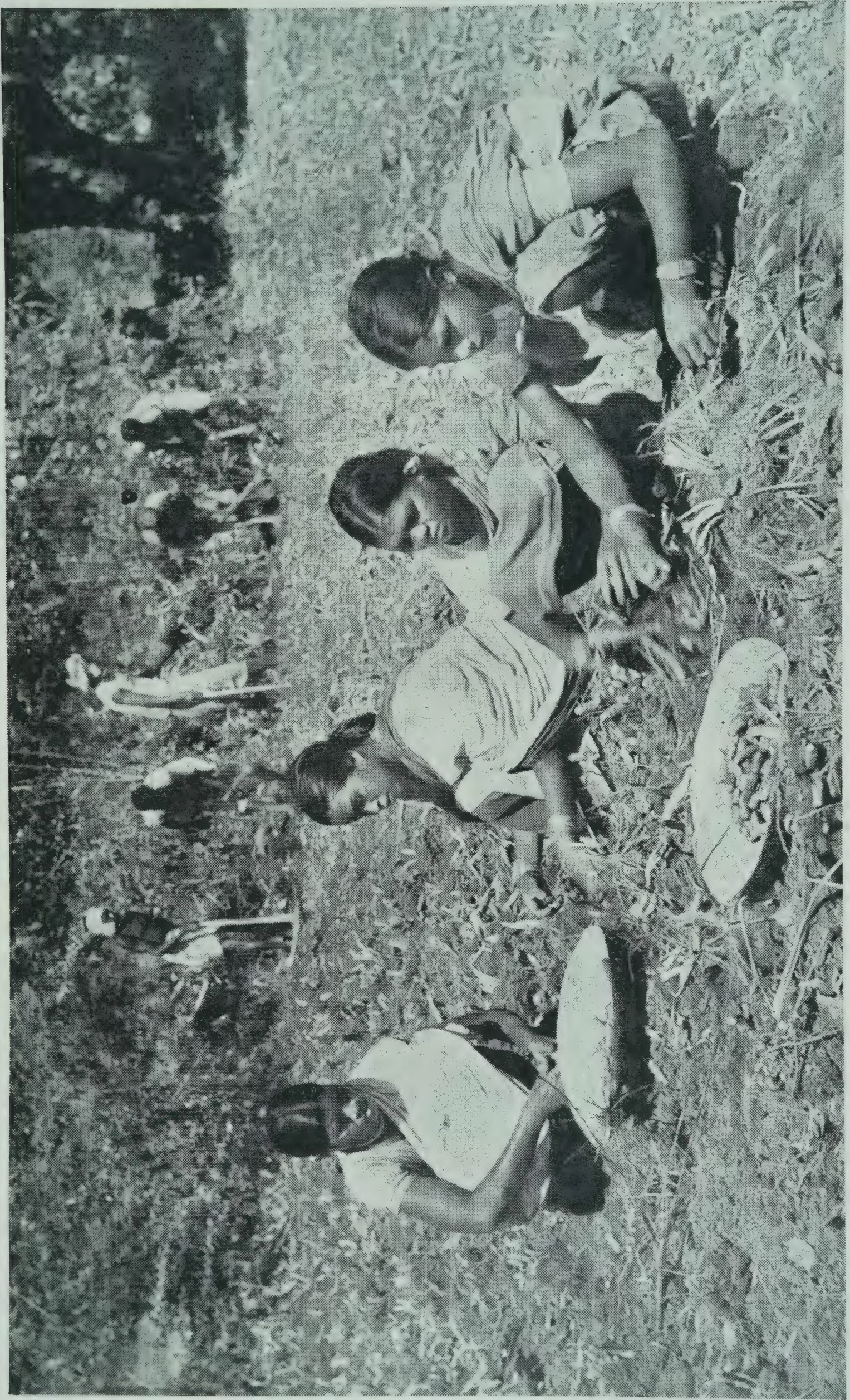
Turmeric crop gets ready for harvest in about 8 to 9 months after planting. The maturity of the crop and the time of harvest are indicated by the withering of the stems and leaves. The harvesting period, however, varies slightly from State to State but generally speaking the main harvesting season begins from February and continues upto April.

In Andhra Pradesh, harvesting commences early in the month of December in East and West Godavari areas, in January—February in Nizamabad, a little later in Cuddapah and as late as March—April in Guntur-Krishna areas. In Maharashtra State harvesting commences in January—February, while in Madras State, the crop is harvested during February to April. Turmeric is cultivated in Orissa State both as a one-year crop and as a two-year crop and their periods of harvesting differ. The one-year crop is harvested in December—January and the two-year crop is harvested from November to February of the second year. In Kerala State, harvesting of the crop commences earlier in the month of December and is completed by about the end of January.

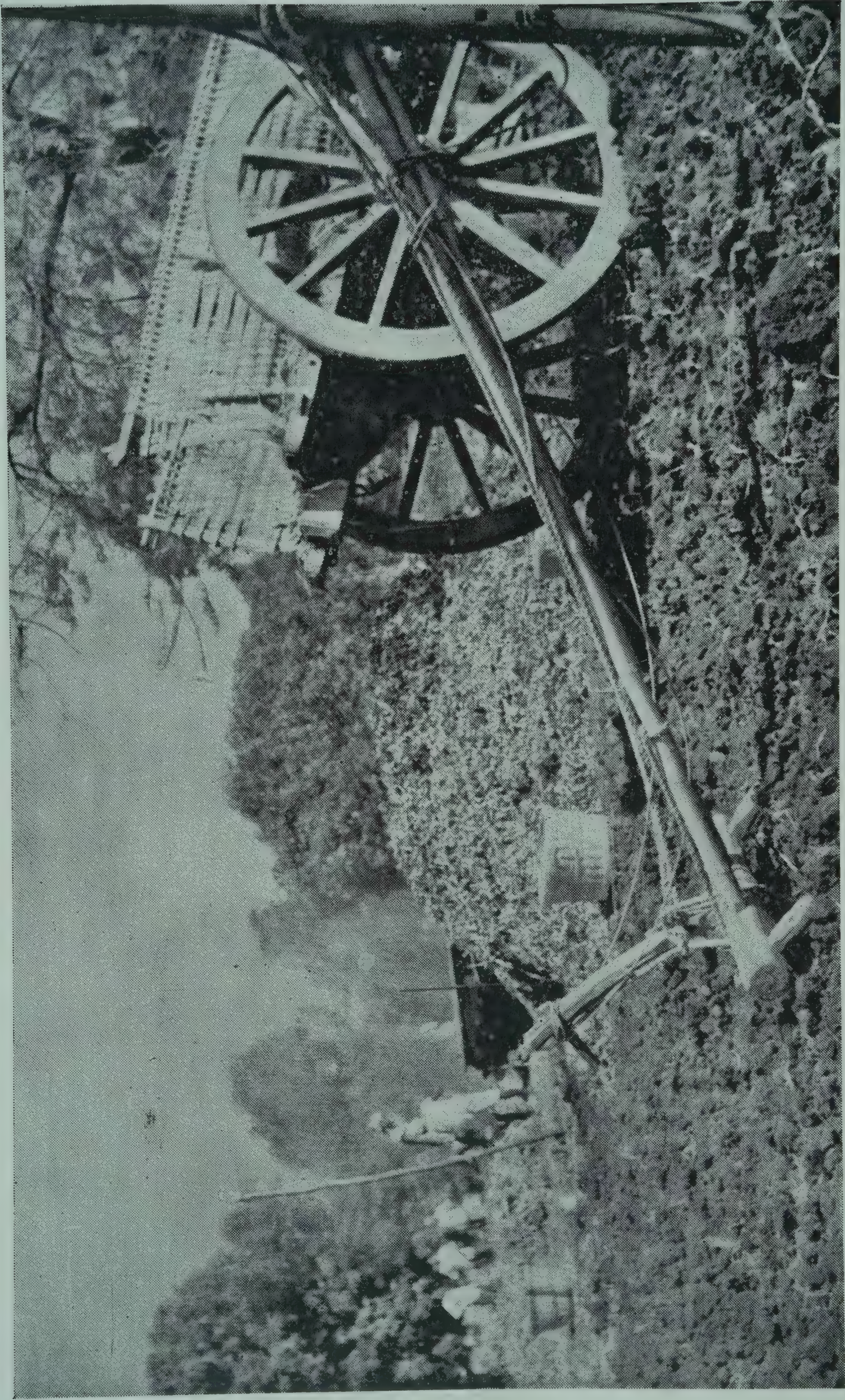
(2) METHODS

Harvesting of turmeric consists in cutting the withered stems and leaves by a sickle, removing them from the field and digging the land by an iron hoe or a similar implement and thereafter gathering the rhizomes. The dried stems and leaves are cut close to the ground and are gathered and used as fuel for boiling the turmeric rhizomes. The field is then given an irrigation to soften the soil. In the absence of irrigation facilities, as in Orissa State, a good rainfall may also be awaited. In Madras State, cutting of the turmeric stems and leaves commences earlier when the leaves start turning yellow. After the leaves are cut, the field is allowed to dry up for a period of about 12 to 15 days and the field is irrigated thereafter.

For digging out the rhizomes from the soil, special hoes, locally known as "Katai Vettis" are used in Madras State. In Orissa State, a special type of iron hoe locally known as "gidi" is in use. In Andhra Pradesh, when the land is sufficiently soft, country ploughs are worked carefully by the side of the rows and the rhizomes are thrown



Harvesting of turmeric in Orissa



Curing of turmeric on the farm in Andhra Pradesh

neatly to a side ready to be picked. Crow-bars and pickaxes are used in other States. The process of digging and uprooting is generally attended to by men while cutting the withered stems and leaves and removing them are done by women.

In some areas, as in the agency tracts of Orissa State, the economic resources of the average cultivators are so limited that they can hardly afford to employ hired labour to undertake harvesting, and have, therefore, to fall back upon domestic labour. Added to this is the problem of storage accommodation. For these reasons, harvesting of turmeric in these areas is not completed in one stretch but is taken up in small lots depending upon the financial requirements and the convenience of the cultivators. It is, however, important to note that any delay in harvesting the crop does not result in deterioration or loss of produce in the case of turmeric.

(3) COSTS

Cost of harvesting constitutes one of the important items of expenditure in the cultivation of turmeric, its share in the total cost of cultivation amounting to as much as 12 to 13% in some of the major producing States. The cost of harvesting turmeric from one acre is estimated at Rs. 40 in Maharashtra and Orissa States, Rs. 45 in Kerala, Rs. 55 in Andhra Pradesh and as much as Rs. 70 in Madras State.

In the Agency tracts of Orissa State, the harvesting is mostly attended to by family labour and the cost of harvesting in these areas is, therefore, little or almost nil.

The custom of paying a share of the harvested produce as wages for the labour engaged for harvesting is not prevalent in any of the major producing areas.

B. Curing and Processing

(1) CLEANING

After harvesting, the rhizomes are cleaned of earth adhering to them in the field itself. Sometimes, cleaning is carried out in the yards near the cultivators' houses. The fingers that may still be attached to the mother rhizomes are separated from the bulbs, and the shrivelled and devitalised rhizomes are also removed. The separation of bulbs and fingers is done to facilitate uniform cooking of the rhizomes and to quicken the process of boiling. Before boiling, the planting material for the next year is also selected.

(2) BOILING

After the turmeric is cleaned, it is ready for boiling. The growers usually bring the produce and boil it in their houses. Some of the growers, however, prefer to do it in the field itself so as to reduce the cost of transport.

Although the methods and equipments used for boiling turmeric vary from tract to tract, the principle involved is the same. The green rhizomes are filled in variously shaped receptacles and a measured quantity of water is added. The 'charge' is then boiled by placing the receptacles over a country oven or furnace till the rhizomes get properly cooked. Dried turmeric leaves and stems harvested from the fields are usually used as fuel and are supplemented by brush-wood, cotton stalk, tur stalk, etc., depending on local availability. The cooked rhizomes are removed from the receptacles and then dried.

The receptacles employed for boiling turmeric in the different areas are of varying sizes and shapes and may be made of earth, iron, tin or zinc.

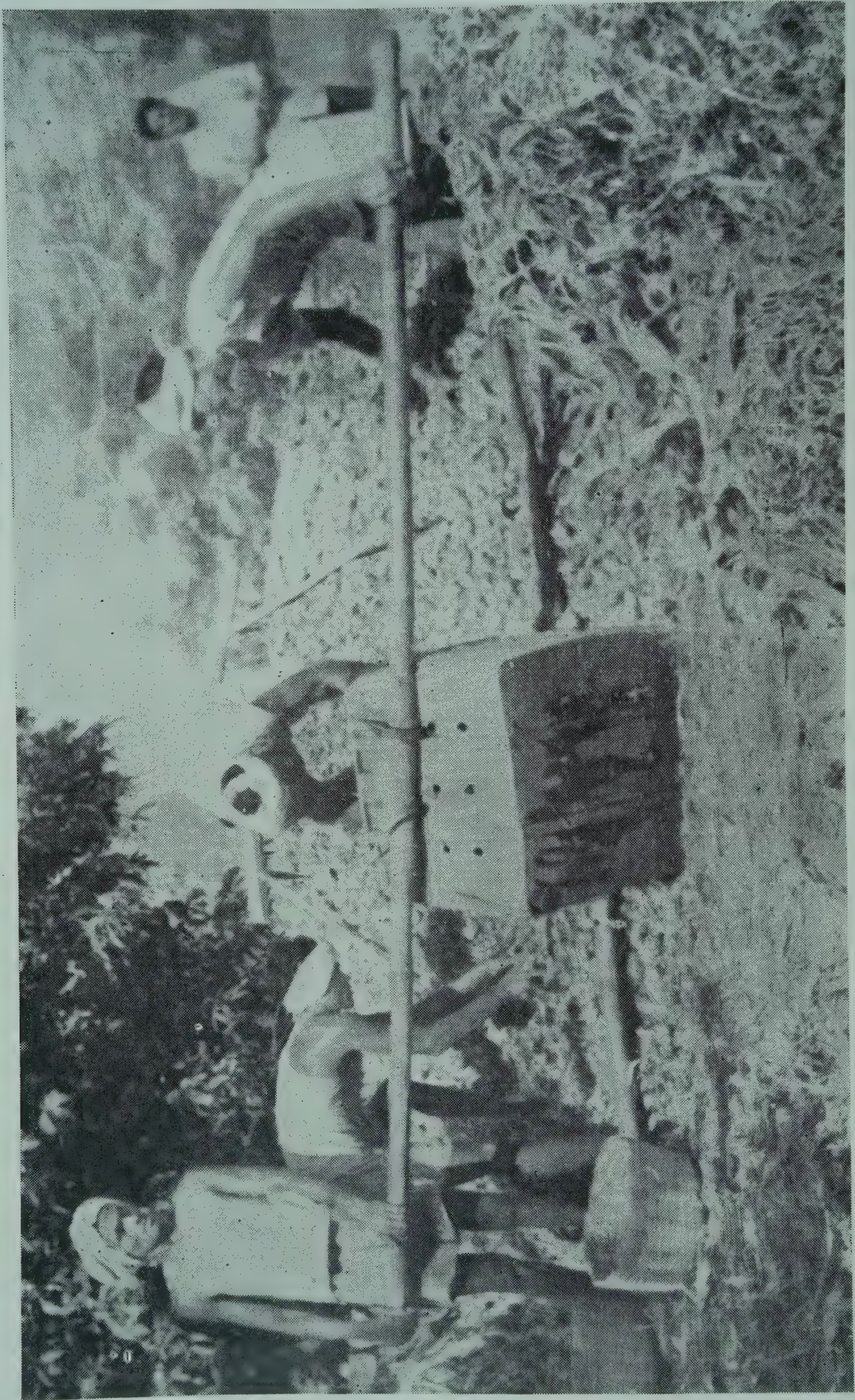
In Duggirala and Cuddapah areas of Andhra Pradesh, iron pans of 6' × 6' × 3' size are used for boiling turmeric. These pans are permanently placed over a furnace having a fire place and an outlet for taking the smoke, resembling the "Sindhwhahi" furnace used for jaggery making. Four immersion troughs of 3' × 3' × 3' size with holes at the bottom and the sides and looped handles at the top are placed inside the pan and filled with turmeric rhizomes. Each trough holds about 250 lbs. of green rhizomes. Water is filled in the pan to cover the rhizomes, the pan is covered with lid and the boiling of the produce is commenced. After about an hour's boiling, there is frothing and white fumes emerge from under the lid when the lid is removed. The troughs are lifted from the pan and the rhizomes are spread out on the drying floor. The troughs are again placed inside the pan and a fresh charge is started. Water lost by evaporation is made up and the boiling of rhizomes is continued. Each charge takes about 1,000 lbs. of green rhizomes and 10 charges can be taken in a day, working for 12 hours, and the produce from one acre can be handled in two days. During the peak harvest period, boiling of turmeric is carried on day and night with suitable labour shifts. In other parts of Andhra Pradesh, ordinary iron pans, generally 4' to 5' in diameter, are used.

In Madras State, iron pans, usually 3' × 2' × 1½' in size are in use. Each pan is capable of boiling 150 lbs. of rhizomes. In some areas in this State rectangular pans of bigger size and made of zinc and tin are also in use. Dilute cowdung suspension in water is added to nearly the top of the rhizomes and covered with a gunny. The rhizomes get cooked in about an hour and there is then frothing up of the liquid and emission of white fumes, accompanied by the characteristic cooked turmeric smell. The rhizomes get softened on cooking and yield to pressure when pressed between the fingers. The proper stage of cooking of turmeric is indicated when a small piece of broom stick pierces through the rhizomes easily without much pressure. When the rhizomes have been cooked sufficiently, the pans are removed from the fire, the water is drained, and the rhizomes are spread out on the drying floor for drying.

In Bombay State also, mostly iron pans of diameter varying from 7 to 10 feet which could take 12 to 28 bags of green rhizomes are used. Most of the furnaces used are of the improved type used for gur making. Turmeric is heaped up in the pan upto a height



Separating turmeric bulbs and fingers by hand



Filling raw turmeric in the pan before curing

of about 9" above the brim. Water is added upto about 4" below the brim. The heap is covered with turmeric leaves in a layer of about 2" in order to facilitate quick cooking. Each charge of turmeric requires from one to one and a half hours to get properly cooked. After the rhizomes are properly cooked, the layer of leaves is removed and after allowing the vapour to escape for some five minutes, the cooked rhizomes are taken out for drying. By practice, the growers are able to correctly judge the critical stages of cooking. In one day about 4 to 5 charges can be handled.

In Orissa State, ordinary oval shaped earthen vessels, each holding about 10 lbs. of raw turmeric, are used. Larger sized vessels are not convenient for easy handling and are not, therefore, very popular. The vessels used in Phulbani and Tikabali areas have wide necks, whereas those in Balliguda and Raika are with narrow necks. Water just sufficient to cover the turmeric is poured into the vessel. For a pot containing 10 lbs. of raw turmeric, about 4 lbs. of water is added. It is then placed on a hearth which accommodates three vessels at a time. The mouths of the vessels are covered with broken pieces of earthen vessels to preserve the steam. In the course of boiling the lid is removed and the turmeric stirred two or three times to accelerate the boiling process and allow the rhizomes at the top to slide down to the bottom.

The test of correct boiling is the colour of the water and the condition of the turmeric. When the water boils thoroughly and assumes yellow colour, the turmeric is tested and, if ready, the vessel is removed from the hearth and the contents transferred to a basket placed over another earthen pot. The hot water passes down to the vessel under the basket. The water is then used for boiling another lot of turmeric. The first lot takes one and a half hours for boiling but subsequent ones take only 30 to 40 minutes.

In some parts of Madras State and in Karad centre of Maharashtra, the rhizomes, after boiling, are made into heaps and these heaps are left undisturbed overnight and are spread out for drying only the next day. Due to its own heat, the rhizomes in the heap get cooked a little more.

The method of boiling followed in Duggirala-Cuddapah areas of Andhra Pradesh appears to be more economical. The furnaces in use are efficient and save fuel considerably. The water is not changed with each charge and there is no need to use fuel to bring the water to the boiling point every time. Since the pan is not removed from the furnace for emptying the charge of turmeric, the furnace heat is conserved and there is, therefore, no wastage of fuel.

It is believed that the stage at which boiling is stopped largely influences the colour and aroma of the final product and skilled men are, therefore, employed for supervising the boiling operation. Overcooking of the rhizomes spoils the colour and the fingers become soft and light resulting in higher percentage of broken pieces during subsequent polishing. It is also important that boiling should be completed within 2 to 3 days after harvest, otherwise the colour of turmeric is affected.

The practice of adding cowdung solution to turmeric during the boiling process in Madras State is neither hygienic nor aesthetic. Cowdung extract is slightly alkaline (it is ammoniacal) and, therefore, imparts a slight orange yellow tint to the core of the turmeric tubers. The Central Food Technological Research Institute, Mysore, has recently done some work on the replacement of the cowdung solution by a chemical treatment and has found that the same results could be obtained by cooking the raw turmeric rhizomes in 0.05 to 0.1 per cent solutions of alkaline additives like lime water, sodium bicarbonate and sodium carbonate in quantities just to cover the rhizomes.

(3) DRYING

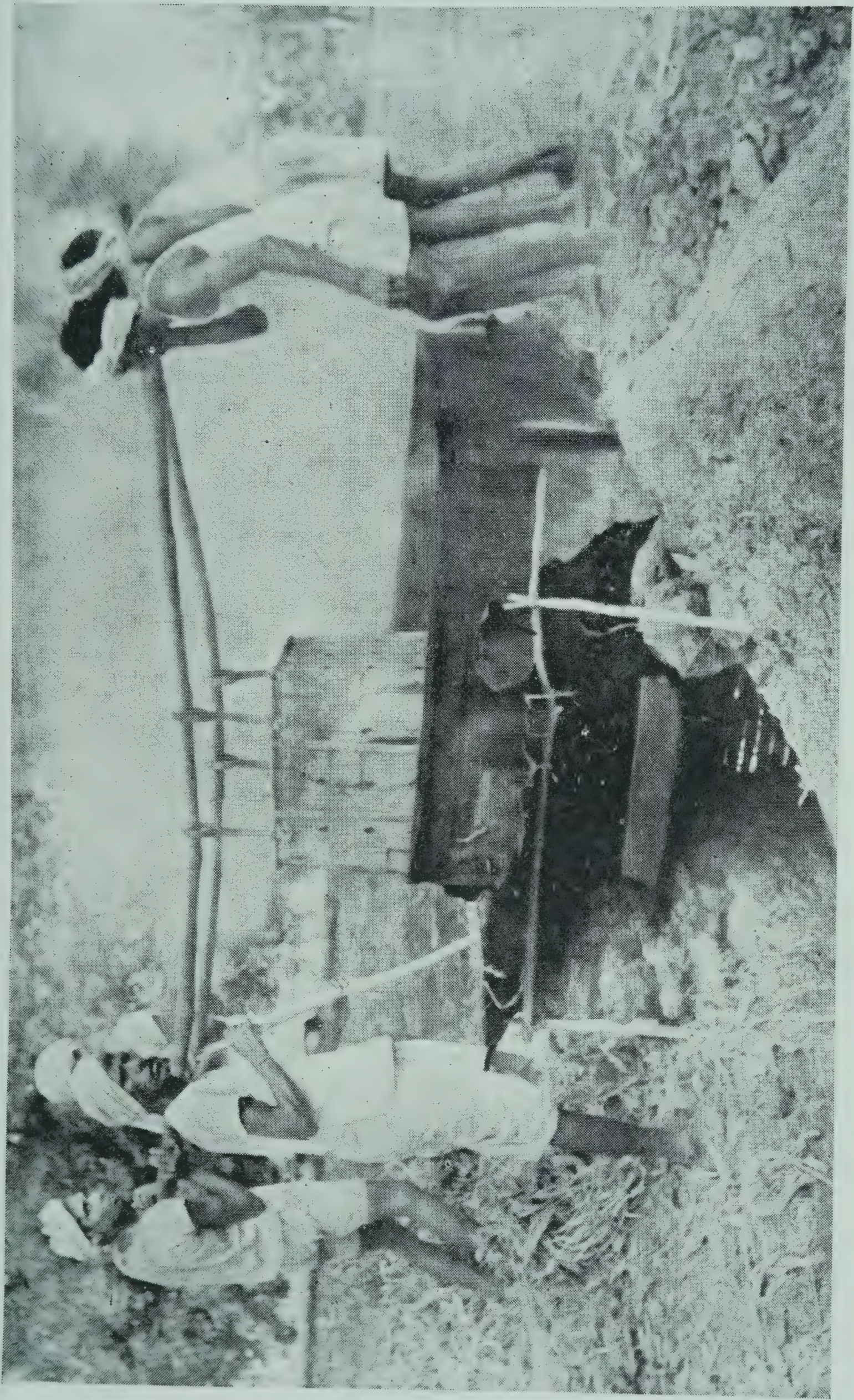
The process of drying is very simple and consist in spreading out boiled turmeric on the drying floor exposed to the sun. The drying floors are sometimes smeared with cowdung. Turmeric is spread out in a layer of about 2" thickness. A thinner layer is not desirable as the colour of the dried produce may then be adversely affected. It takes 10 to 15 days for the rhizomes to get thoroughly dried. During this period, the produce is stirred three or four times to ensure uniform drying. In some areas, large bulbs are sometimes cut each into two or more pieces in the course of drying to accelerate the process. Drying is complete when the material becomes quite hard and brittle. Rain at the time of drying the produce spoils its quality by turning the turmeric rhizomes hard and black.

The growers in Orissa State generally do not dry turmeric completely and bulk of the produce found in the assembling markets is only partially dried and contains sometimes as much as 25 to 30% of moisture. The growers are poor and wish to dispose of the produce as quickly as possible. Besides, a large number of them take loans from petty merchants and are required to repay these loans in kind at a rate stipulated at the time of borrowing and, therefore, have no inducement to dry it properly.

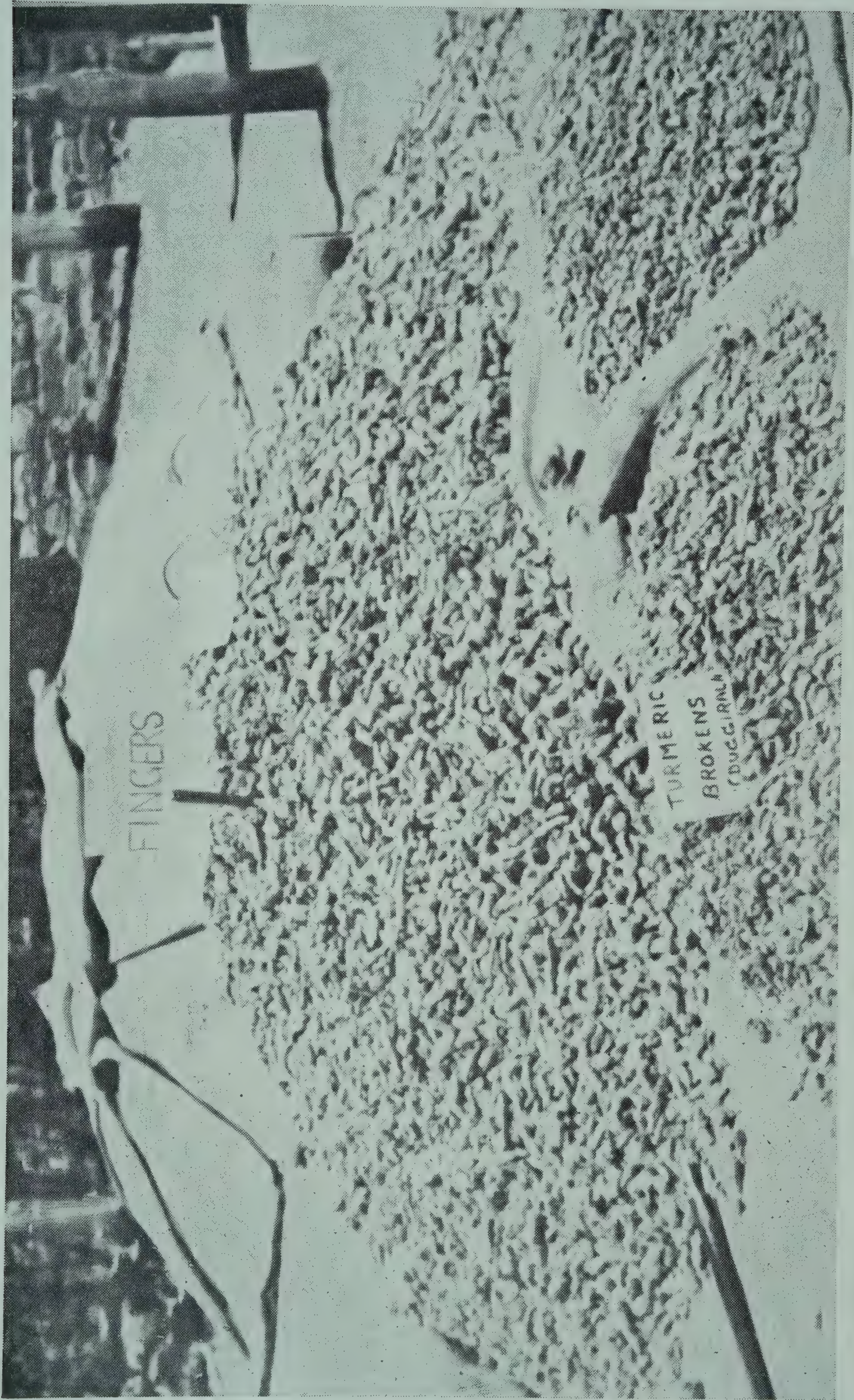
Turmeric arriving at the Nizamabad market in Andhra Pradesh and at most of the assembling markets in Kerala State is also only partially dried and contains anything from 15 to 30% of moisture. The merchants take advantage of this and offer very low prices to the producers assessing the moisture content at more than what it really is. The growers in these areas should be educated to properly dry the produce before taking it to the assembling markets. By doing this, they will not only get fair price for their produce but also save in the transport costs.

(4) SORTING

Growers generally do not undertake any sorting of the dried turmeric before it is taken for sale. Even though bulbs and fingers are separately boiled and dried, producers generally market turmeric in the mixed form as in Nizamabad, Duggirala and Godavari areas in Andhra Pradesh and in all the centres in Orissa. In Maharashtra and Kerala, very little cured turmeric is marketed by growers in the bulb form since all the fresh bulb rhizomes are utilised for planting purposes. In Madras State, however, fresh fingers being reserved as



A charge of raw turmeric being dipped in the boiling pan



Heaps of cured turmeric fingers and brokens (Duggira'a quality)

sowing material, sizeable quantities of cured and dried bulb turmeric is also marketed by the growers. Unlike in Andhra Pradesh and Orissa States, the growers in this State boil, dry and market bulbs and fingers separately.

(5) POLISHING

The boiled and dried turmeric has a rough and hard outer surface and a few scales and root bases may also be sticking to the rhizomes. In order to smoothen its external surface and also to slightly improve its colour, dried turmeric is subjected to various processes commonly known as "polishing" of turmeric. Polishing of turmeric is done both manually and mechanically. Different methods of polishing turmeric as followed in different areas are described below :

(a) *Hand Polishing*.—The simplest method of polishing consists in rubbing the product on a hard surface or trampling it under feet wrapped in gunny bags. In this method of polishing, the outer layer gets smoothened without much improvement in the colour of the outer surface and the turmeric that is marketed without any further processing is known in the trade as "unpolished turmeric". This practice of polishing is usually followed by the growers themselves before they market their produce. In some centres like Kothapettah in Andhra Pradesh and in most of the centres in Orissa and Kerala, the merchants at assembling centres also resort to this method of polishing. In Kerala State, this process is known as "garbling" and the turmeric is exported as "garbled turmeric".

In the Khond Agency of Orissa, turmeric is put in long bamboo structures, built in the shape of a small country boat, known as "Dolis". A labourer sits at either end and polishes the turmeric by rubbing it with his feet against the rough surface. About 45 lbs. of turmeric can be polished at a time and $4\frac{1}{2}$ maunds of turmeric can be polished per day by 2 persons working for 8 hours. This method of polishing is also followed at the assembling centres of Belliguntha and Surada.

The merchants at Parlekamedi follow a slightly different method. Turmeric is put in big round baskets, each having a capacity of 5 maunds. About 12 persons tie pieces of gunny cloth on their feet and polish turmeric by trampling it under their feet. About 15 maunds of turmeric can be polished per day in this manner.

In most of the turmeric producing areas in Madras State, a different method is followed. New bamboo baskets are tied at the rims by means of a rope and kept suspended from a horizontal post just above the head, the baskets are filled two-thirds with dried turmeric and a few small granite stones are also put in each basket. Two women, one on each side, stand and hold the basket and shake it up and down alternatively. This way the turmeric rhizomes rub against the rough surface of the basket as well as with the stones and get polished. About 5 maunds of dried turmeric can be polished by this method in a day of 8 hours. This method is known as "polishing by swing baskets".

Yet another method of polishing turmeric that is becoming popular in the States of Madras and Orissa consists in polishing turmeric in hand-operated polishing drums known as turmeric "polishers" introduced by the Madras Agricultural Department. The polisher consists of a barrel or drum, generally 2' long and 3' in diameter, mounted over an axle passing through its centre. The axle in its turn is mounted on two wooden posts and is connected with a handle at either end for rotating the drum. The sides of the barrel are made of expanded metal with a close mesh. The barrel takes a charge of about 70 lbs. of dried turmeric and polishes it in 30 minutes working at 400 revolutions per minute. The polishing is effected by the rhizomes beating against the rough edges of the meshes of the machine and also rubbing against each other as they roll inside the drum. When polishing is complete, the door which runs the entire length of the drum is opened and the contents transferred to a bag or basket placed on the ground under the drum. Its normal output is about 14 maunds of polished turmeric per day of 8 hours, with two men working on it.

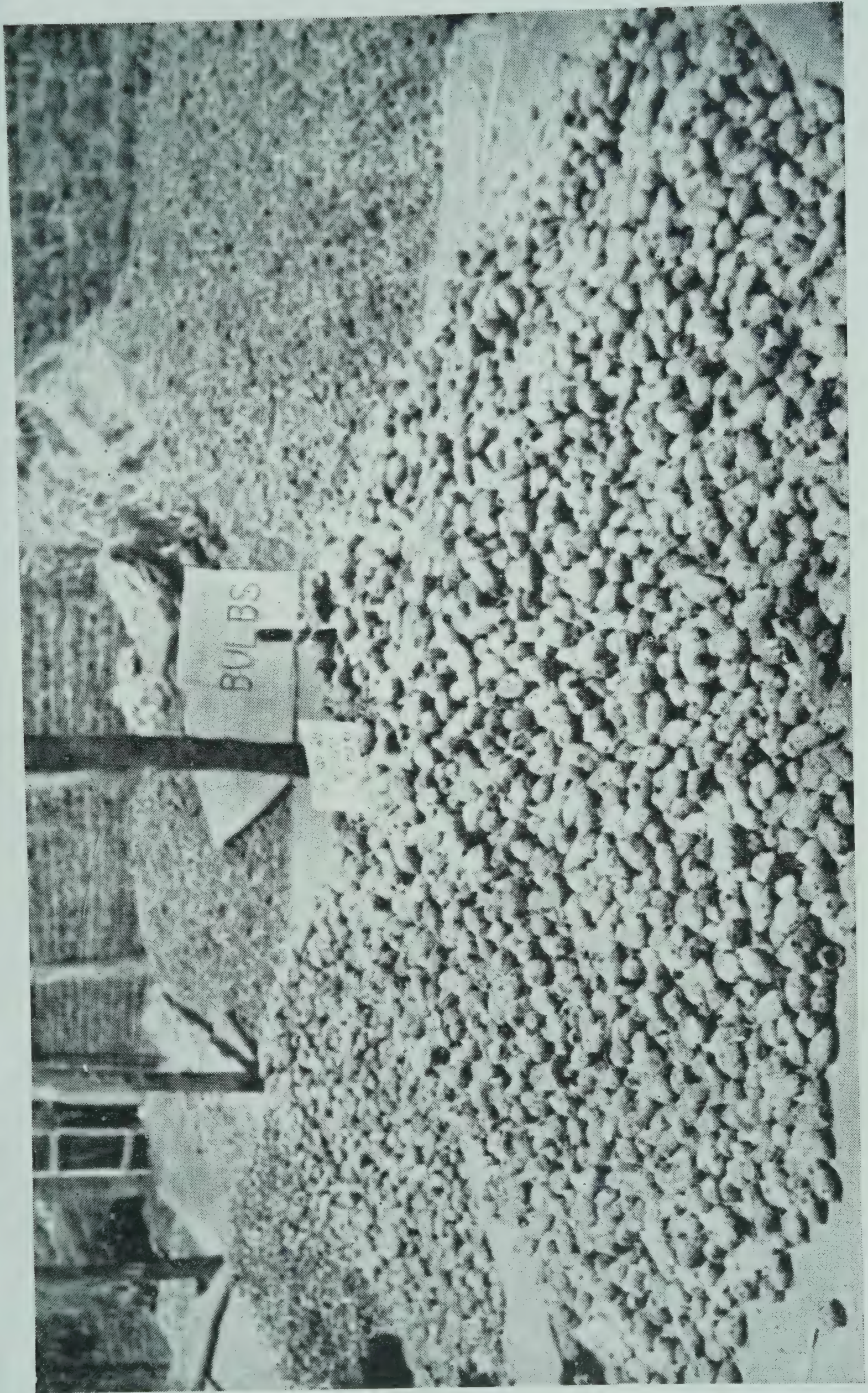
This type of polisher is locally made and costs Rs. 200 to Rs. 225.

(b) *Machine polishing*.—In most of the assembling centres for turmeric in the country, turmeric is polished in drums driven by mechanical power and polishing by this method is known in the trade as "machine polishing" and the turmeric so polished as "machine polished".

A polisher consists mainly of an octagonal or hexagonal shaped hollow wooden drum, generally about $4\frac{1}{2}$ ' long and 3' in diameter, through the centre of which passes 2" thick iron rod to serve as an axle for rotating the drum. There is an opening on one side of the drum which can be closed by means of a door. The motive power for rotating the polishers is supplied by oil engines, steam boilers or electric motors. The capacity of the drum of the above-mentioned size for each charge is about 16 maunds of cured turmeric and it requires about $1\frac{1}{2}$ hours to $1\frac{3}{4}$ hours for polishing the turmeric. In some centres like Erode, drums of higher capacity which would take about 35 maunds per charge are used. In Nizamabad, circular drums made of iron and capable of polishing 35 to 40 maunds per charge are in use. Such polishing drums are generally locally made and cost about Rs. 800 to Rs. 1,200 depending on size. These polishing units are usually combined with rice mills, oil mills or cotton gins. In centres like Nizamabad, Karur, Salem, etc., where large quantities of turmeric are not stored in pits, these polishing units work for a period of only about 2 to 3 months in a year, remaining idle during the rest of the period.

In big assembling centres like Duggirala, Erode, Sangli, etc., where larger quantities of turmeric are stored in pits, polishing is continued all the year round. These polishing units are owned by private parties and turmeric merchants get the produce polished on payment.

In this method of polishing, turmeric rhizomes get a high degree of smoothness due to the rubbing of the rhizomes against the sides of the rotating drums and also due to the auto-collision of the



A heap of cured turmeric bulbs (Duggirala quality)

rhizomes. The external colour of turmeric also improves in the process depending on the degree of polishing given. During the polishing process, the epidermis, the scales and rootlets are removed from the outer surface of the rhizomes and these fall down in the form of dust, which is collected and used as manure. In some centres this dust is reported to be used in the manufacture of incense sticks. The amount of dust formed during the process constitutes the polishing wastage. This polishing loss depends on the degree of polishing given and also on the inherent quality characteristics of the particular variety of turmeric. Generally speaking, the loss is more in respect of varieties having a thick epidermis and a comparatively soft core. Usually 5% to 8% of the weight of the turmeric is the polishing wastage during "full polishing" and 2% to 3% during "half polishing". As the polishing wastage is an important factor deciding the price of the cured and dried turmeric, in which form the producers market their produce, it is necessary that a systematic study of the polishing loss in respect of various commercial qualities of turmeric marketed in India is carried out.

The number of polishing units, in different assembling centres in India, their capacities and approximate quantities of turmeric polished during 1960-61 are given in the following table:

TABLE 34

Number of polishing units, their capacities and approximate quantities of turmeric polished in different assembling centres in India (1960-61)

Centre	No. of polishing units	Total No. of polishing drums	Total capacity for polishing (per day of 8 hrs.)	Estimated quantity of turmeric polished during 1960-61
Andhra Pradesh :			(maunds)	('000 mds.)
Duggirala	4	16	1,280	246·0
Cuddapah	4	19	1,520	179·0
Rajempet	1	4	320	12·0
Kodur	2	8	640	25·0
Nizamabad	12	33	2,640	100·0
Maharashtra :				
Sangli	41	N.A.	902	300·0
Tasgaon	1	3	250	15·0
Madras :				
Erode	6	6	210	165·0
Salem	1	1	35	41·0
Karur	1	1	35	9·0
Orissa :				
Berhampur	2	8	175	2·8

There are no polishing units in Kerala State since the entire production is marketed in the form of "unpolished turmeric".

(6) COLOURING

Turmeric is made more attractive by resorting to colouring after giving the rhizomes a partial polish. For imparting colour only half polished turmeric is used since the colour does not stick to rhizomes that have been polished fully to a smooth finish. The colour may be imparted either by a dry process or by a wet process. In the dry process, turmeric powder or a yellow dyestuff ("middle chrome or chemichrome") is added to turmeric in the polishing drums after it is partially polished, and the drum is then rotated for a further period of about 10 minutes when the rhizomes attain an attractive yellow colour. In the wet process turmeric powder or the chemicals mentioned above are suspended in water and sprinkled over the rhizomes which are then shaken in baskets to evenly colour the rhizomes as in Madras State or are rubbed well with hand as in Andhra Pradesh. Thereafter the rhizomes are well dried under shade for about a week. Wet colouring is believed to give a brighter appearance to rhizomes.

At Erode in Madras State a paste made of alum, castor seed, turmeric powder and sometimes "chemichrome" is used for colouring the half polished turmeric. Though the actual composition of this paste is kept a commercial secret, enquiries made during the present survey revealed that these materials are usually mixed in the following proportions :

For colouring 100 bags of turmeric (175 maunds) :

Alum	6 lb.
Castor seed	20 lb.
Turmeric powder	3½ standard md.
"Chemichrome" (when used)	10 lb.

It is said that castor seed paste and alum act as binders while the chemichrome and turmeric powder act as colouring agents. Chemichrome being bright yellow in colour modifies, in conjunction with turmeric powder, the colour of the finished turmeric to a bright yellow. Dyed turmeric sold as such or after powdering carries lead with it and, therefore, contaminates food preparations when used in them.

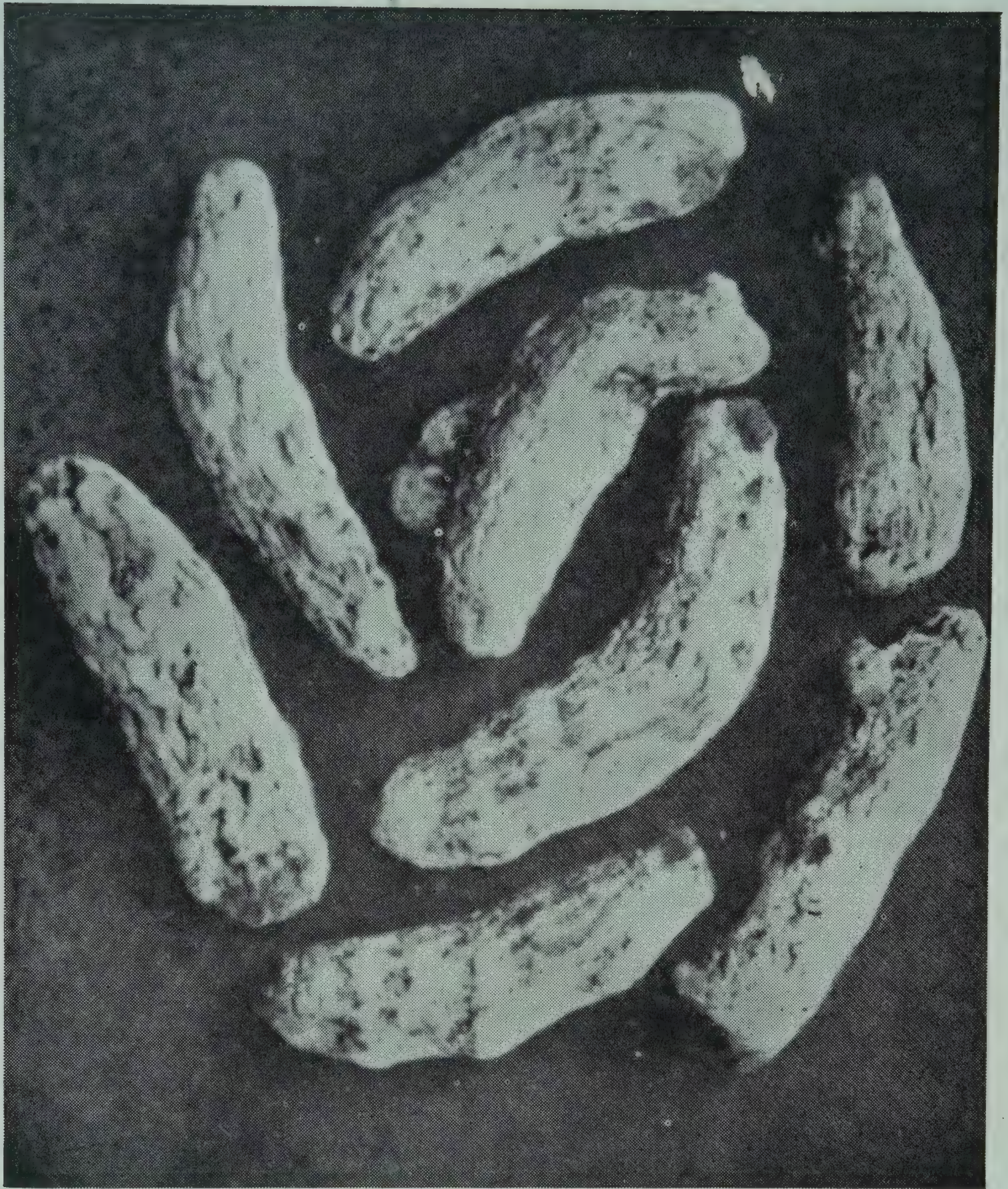
Addition of such foreign substances for imparting colour to turmeric is, therefore, highly undesirable and should be totally discouraged or banned.

(7) COSTS

As stated earlier, most of the processing operations involved in the preparation of turmeric for the market such as cleaning, boiling, drying and sorting are attended to by the growers themselves. The total cost of these operations varies from State to State depending upon local conditions. Information collected during this survey indicates that these charges vary from Re. 1 to Rs. 2 per standard maund of cured turmeric in different States.



Cured and processed turmeric bulbs



Cured and processed turmeric fingers

The charges for polishing turmeric by rubbing with hands or trodding under feet vary from 0.12 P. to 0.19 P. per standard maund of polished turmeric while the charges for polishing in "swing baskets" work out to 0.25 P. per standard maund. When turmeric is polished in hand-operated drums, the charges vary from 0.37 P. to 0.50 P. per standard maund of polished turmeric.

Charges for polishing in machines in different centres are given below :

Centre	Polishing charges per standard maund	Remarks
	Rs. P.	
Duggirala	0.41	Charges collected on the weight of polished turme- ric
Cuddapah	0.50	
Nizamabad	0.40	
Salem	0.75	Charges collected on the weight of unpolished turmeric.
Erode	0.37	
Karur	0.56	

C. Grading and Standardisation

(1) PRESENT METHOD OF COMMERCIAL CLASSIFICATION AND GRADING

As stated earlier in Chapter I, there are as many as sixteen commercial qualities of turmeric recognised in the trade in the country. These commercial qualities are usually named after the region or areas where these are produced. Turmeric produced in different regions exhibits certain variations in its quality which is commonly determined on the basis of the following characteristics.

External appearance.—Cured and dried rhizomes have a rough outer surface and present a dull woody colour. The nodes are more prominent in some rhizomes than in others. The thickness of the epidermis also varies from variety to variety.

When turmeric bulbs and fingers have been subjected to polishing their outer surface becomes smooth and may also improve in colour when it is fully polished. In the trade, turmeric having a smooth external surface is considered to be of superior quality. Also, the produce with thick outer layer is considered inferior in quality since this involves greater loss at the time of polishing.

Maturity and hardness.—Turmeric of good quality should be very hard and should break with a metallic sound. The hardness of the rhizomes is influenced by their maturity and the intrinsic varietal quality.

Length and thickness.—Length and thickness of turmeric rhizomes vary considerably and are important factors in determining their value. The size of rhizomes not only depends upon variety but is also influenced by the agronomical practices followed in its cultivation. For this reason turmeric rhizomes of varying sizes are produced in the same commercial quality. Long and thick fingers and big sized bulbs are usually preferred in the trade.

Colour of the core.—The core colour of rhizomes is the most important factor in deciding the quality of turmeric. The core colour depends on the intensity of the “curcumin” pigmentation contained in the rhizomes. Turmeric produced in different regions exhibits wide variations in the intensity of core colour, varying from lemon yellow to dark brown and many shades of yellow in between. Lemon yellow to bright yellow colour of the core is usually considered as most desirable.

Pungency and aroma.—Pungency and aroma are two other factors determining the quality of turmeric. Both depend on the essential oil content in the rhizomes.

Moisture.—The percentage of moisture in the cured and dried turmeric is also an important factor. Good quality turmeric should be well dried.

Although turmeric is marketed in the country at present under sixteen commercial qualities, these, at best, are indicative of their respective areas of production and are not based on any rational standards of quality. As pointed out earlier, turmeric produced in the same region may exhibit variations in respect of certain quality characteristics such as size, colour of the core, hardness, etc. Therefore the present method of commercial classification of turmeric followed in the trade should be replaced by a more scientific system of classification based on the common quality characteristics of turmeric such as size, core colour, hardness, etc.

Turmeric is marketed in the form of fingers and bulbs. These may, again, be polished or unpolished. It is also marketed in the powder form.

Growers generally do not undertake any grading of the produce before marketing. At best, they may separate out bulbs and fingers and market these separately.

Merchants at assembling centres generally resort to some form of grading based mainly on the length and thickness in the case of fingers and diameter in the case of bulbs, prior to despatch to various distributing and consuming centres. This is carried out by the simple operation of hand picking. Small broken pieces, extraneous matter and infested rhizomes that may be found in the bulk, are separated out by hand. Most of the important merchants at assembling centres have their trade marks under which they market the produce. One merchant may have more than one such trade mark, each indicative of a specific quality of produce. The usual charges for sorting the produce according to trade descriptions vary from 0·06 P. to 0·19 P. per standard maund of turmeric.

No further grading of the produce is generally undertaken during the course of the rest of its marketing.

(2) SUGGESTIONS FOR GRADING AND STANDARDISATION

From the foregoing it is evident that the present system of grading turmeric is highly irrational. Further, the existing system is not based on any common standard equally understood by the trade in different areas, each merchant following his own standard of grading. As a result the contract terms adopted by the trade at different centres are also not uniform. However, turmeric is a commodity that lends itself to grading on the basis of well defined quality standards.

Statutory grades and grade specifications for agricultural commodities are prescribed under the Agricultural Produce (Grading and Marking) Act, 1937. These grades are popularly known as Agmark grades. Although turmeric has already been included in the schedule to the Agricultural Produce (Grading and Marking) Act, grades and grade standards for it have not yet been prescribed under the Act.

With a view to drawing up standard grades and grade specifications for turmeric under "Agmark", 130 commercial samples of turmeric fingers, bulbs (both polished and unpolished) and powder were collected from important assembling and consuming markets from most of the States in India. These samples were analysed for various quality factors such as moisture content, total ash, ash insoluble in HCl, crude fibre content, curcumin dye content, length and thickness of fingers and bulbs, natural test weight, presence or absence of lead, chromate colours and coal tar dyes. The results of analysis of these commercial samples of turmeric are given in Appendix XXI. The range of variations in the quality characteristics of the samples analysed is given in Appendix XXII. Based on these analytical data, it has been found possible to evolve a simple system of grading turmeric fingers and bulbs on the basis of size and core colour, two of the most important factors in deciding quality and the tentative grades and grade specifications for grading turmeric fingers, bulbs and powder, are given in Appendix XXIII.

Turmeric is broadly classified into "bulbs" and "fingers". These again may either be "polished" or "unpolished". The size and core colour are the two most important factors deciding the quality of all the above four forms of turmeric. In prescribing the grades and grade standards, therefore, these two factors have been considered. The core colour of the turmeric varies from lemon yellow to dark brown, with the intensity of pigmentation ranging between these two colours. The three grades—lemon yellow to bright yellow, orange to light red and deep red to brown—have therefore been prescribed for all the four forms of turmeric.

In prescribing the other factor, *viz.*, size—length in respect of both polished and unpolished fingers and diameter in respect of both polished and unpolished bulbs—have been considered.

As may be seen from the appendix, six grades have been prescribed for each of these four forms of turmeric, making in all 24 grades. The entire production of turmeric in the country can be graded under any one or the other of these grades.

For turmeric powder, only two grades have been prescribed.

In framing these specifications, the minimum standards of quality laid down under the P.F.A. Rules have also been kept in view.

As these grades and grade specifications are based only on the results of analysis of a few commercial samples, these grades and grade specifications should be considered only as tentative.

In most of the important assembling centres for turmeric there are representative trade associations and in a few centres there are also co-operative marketing societies handling turmeric. These associations and co-operative societies should come forward and make arrangements for grading turmeric on the basis of the tentative grades and grade specifications prescribed on an experimental basis. For the experimental grading of turmeric, the following centres are suggested :

State	Centre
Andhra Pradesh	Duggirala
	Cuddapah
	Nizamabad
	Kothapetah
Maharashtra	Sangli
	Karad
Madras	Erode
	Salem
	Karur
Orissa	Tikkabali
	Jeypore
Kerala	Calicut
	Alleppey

D. Methods of Packing

Gunny bags are the only type of container used for packing turmeric fingers and bulbs in various stages of their marketing.

Producers in all the producing areas carry the produce to the assembling markets in gunny bags. In Madras State and in some centres in Andhra Pradesh the commission agents and the co-operative societies supply gunny bags to their clients without collecting any charges. The buyers in assembling markets usually have to bring their own gunny bags.

For internal trade within the country good quality once-used gunnies are generally used. For export trade, however, the buyers insist on the use of new gunnies. Sometimes packing in double gunnies is also resorted to for sending turmeric to foreign countries.

Normal size of the gunny bag used is $44'' \times 26\frac{1}{2}''$. The quantity of turmeric that can be filled in each gunny bag varies according to whether it is in the form of bulbs or fingers. In different assembling centres in the country, the quantity of turmeric filled in a bag varies from 70 kgs. to 90 kgs. for despatch to distributing and consuming centres in the country. For exports to U.K., each bag of turmeric weighs $1\frac{3}{4}$ cwts. net while for exporting to Ceylon the net weight of turmeric in a bag is 168 lbs.

In the interest of uniform trade practices, it is suggested that each bag may be filled in with 75 kgs. of turmeric.

The cost of once-used single gunny varies from Re. 1.00 to Rs. 1.25 while a new gunny may cost from Rs. 1.50 to Rs. 1.75. The tare weight of each gunny varies from 2 lbs. to $2\frac{1}{4}$ lbs.

The commission agents at distributing centres sell turmeric to the buyers along with the gunnies, and credit only a nominal value of about 25 P. to 37 P. per gunny to the consignors at assembling centres.

Turmeric powder is packed in paper or alkathene bags or in tins of varying sizes.

CHAPTER V

METHODS OF MARKETING

A. Assembling

(1) QUANTITIES SOLD IN VILLAGES

Assembling of turmeric generally takes place in two ways. First, through the growers themselves who take the produce to the nearby market for sale, thus directly participating in the assembling of the produce. In the second method, the different assembling agencies such as village merchants, itinerant merchants or agents of wholesale merchants, exporters, etc., purchase turmeric from growers in the villages or the farms and take the same to the wholesale markets.

The quantity of turmeric sold in the village and that taken to the assembling markets for sale by the growers vary considerably from area to area and from State to State as may be seen from Appendix XXIV, a summary of which is given below in Table 35.

TABLE 35

Estimated quantities of turmeric sold in the villages and quantities taken to assembling markets for sale by growers (1960-61)

('000 mds. of cured turmeric)

State	Total estimated marketable surplus	Quantity sold in villages		Quantity taken to assembling markets	
		Quantity	Percentage	Quantity	Percentage
Andhra Pradesh	904	587	65	317	35
Maharashtra	562	28	5	534	95
Orissa	300	270	90	30	10
Madras	300	3	1	297	99
Kerala	70	42	60	28	40
TOTAL	2,136	930	44	1,206	56

It may be seen from the above table that village sales are predominant in the States of Orissa, Andhra Pradesh and Kerala. During the course of survey it was observed that in some producing areas like Kothapettah and Duggirala in Andhra Pradesh, the entire marketable surplus is disposed of by the grower in the village itself. The sales in villages appear to be negligible in the State of Maharashtra and Madras, almost the entire marketable surplus being taken by the producers to the assembling markets for sale.

The reasons for large scale village sales in the States of Andhra Pradesh, Orissa and Kerala seem to be different. In Duggirala and Kothapettah areas of Andhra Pradesh, the reputation of the produce of this region and also the better economic prosperity of the growers which enables them to hold the produce for a longer period, combined

with larger quantities of turmeric offered for sale by them, attract the buyers to villages. In Orissa State, on the other hand, the general backwardness of the local cultivators who are generally tribal people, their pressing need for cash immediately after harvest and the lack of adequate marketing facilities have virtually forced them to dispose of the produce in the village itself, thus exposing them to the exploitation of "panoes" or village merchants. The position in Kerala State is somewhat different. The turmeric produced in Cochin and Alleppey areas is mainly exported to U.S.A., from where there is a steady demand. For fulfilling the commitments made the exporters try to procure as much of the produce as possible from the producers in the village itself.

It would appear from the foregoing that there is an urgent need for providing better marketing facilities to the tribal cultivators of turmeric in the Orissa State.

(2) SYSTEM OF SALE IN VILLAGES

The systems of sale of turmeric followed in villages in the above regions are described below :

As pointed out earlier, the producers sell turmeric only in the cured and processed forms. They do not generally separate out bulbs and fingers but sell the produce in mixed lots.

The quantity of turmeric sold by the growers in the villages is purchased by the different agencies such as village merchants, merchants from assembling markets and exporters. The estimated share of different agencies in the various States in purchasing turmeric from villages is indicated in the following table :

TABLE 36

Estimated share of different agencies in the purchase of turmeric from villages during the year 1960-61

(in '000 standard maunds)

State	Total estimated market- able surplus	Quantities purchased from the growers by				Total			
		Village merchants	Merchants from assemb- ling mar- kets	Exporters					
		Quan- tity	Per- centage*	Quan- tity	Per- centage*	Quan- tity	Per- centage*	Quan- tity	Per- centage*
Andhra Pradesh	904	45	5	542	60	..	..	587	65
Maharashtra	562	28	5	..	..	..	..	28	5
Orissa	300	186	62	84	28	..	..	270	90
Madras	300	3	1	..	..	..	..	3	1
Kerala	70	6	9	..	..	36	51	42	60
TOTAL	2,136	268	13	626	29	36	2	930	44

*Percentages are to the total marketable surplus.

It may be observed from the above table that in Andhra Pradesh, the buyers purchasing turmeric from villages are mostly merchants from assembling markets. In Kerala, the buyers are usually purchasing agents of the exporters while in Orissa State they consist of village merchants or "panoes". In Madras and Maharashtra also the buyers are only village merchants. The panoes of Orissa State visit the producing areas frequently and advance loans to the growers. When the produce is ready for market, they visit these areas and effect purchases, generally at a rate contracted far in advance.

Out of 930 thousand maunds of turmeric, representing 44% of the total marketable surplus in these five States, purchased directly from villages by these different agencies, 268 thousand maunds or 28.8% purchased by the village merchants are taken to various assembling markets where it is offered again for sale. The remaining 662 thousand maunds or 71.2% purchased by other agencies do not generally enter the assembling markets but are despatched directly for distribution.

In village sales, services of brokers are usually sought after by buyers only in Andhra Pradesh, particularly in Kothapettah and Duggirala areas. In other States buyers generally effect purchases directly from the growers without any help from intermediaries.

In Kothapettah area of Andhra Pradesh a peculiar class of brokers known as "khayidadars" is operating. For each village, one "khayidadar" is selected by the growers of the village. The right of acting as "khayidadar" is auctioned and the bidder who assures the maximum amount for the village temple is selected as "khayidadar" for that season for that village. The "khayidadar" in turn is authorised to collect "khayida" or brokerage from the buyers at rates fixed by the producers in the village.

In village sales, the price is usually settled by direct negotiation after visual examination of the produce. The buyers themselves generally bring weights and scales to the villages though in some areas the use of weights and scales kept in the villages is insisted upon by the growers. The gunny bags for packing turmeric are also invariably brought by the buyers who also arrange for weighment and transport of the produce. Payment is made immediately after the weighment of the produce, though delayed payment may be agreed to between the growers and the buyers.

In village sales, the grower-sellers do not have to incur any market charges. The buyers however have to meet the charges for weighment and handling ranging from 0.12 P. to 0.15 P. per standard maund and also brokerage, when payable, at 0.25 P. to 0.50 P. per standard maund. In addition to these charges, cost of transporting the produce from the villages to the assembling centres is also borne by the buyers.

(3) SALES IN ASSEMBLING MARKETS

(a) *Quantities assembled*.—It has been stated earlier that out of the estimated marketable surplus of turmeric in the five major producing States, nearly 31% is directly taken from the villages for distribution and the remaining 69% is assembled in various assembling

markets for sale. A list of important assembling markets in the country together with approximate quantities of turmeric handled in each of these markets is given in Appendix XXV.

The following table indicates the quantity of turmeric assembled for sale in the assembling markets in the five major producing States.

TABLE 37

Estimated quantities of turmeric assembled in the assembling markets in the major producing States in India (1960-61)

(’000 maunds of cured turmeric)

State	Total estimated market- able sur- plus	Quantity assembled for sale in the assembling markets							
		By growers			By village merchants			Total	
		Quan- Per-		centage*	Quan- Per-		centage*	Quan- Per-	
		tity	centage*		tity	centage*		tity	centage*
Andhra Pradesh . . .	904	317	35		45	5		362	40
Maharashtra . . .	562	534	95		28	5		562	100
Orissa . . .	300	30	10		186	62		216	72
Madras . . .	300	297	99		3	1		300	100
Kerala . . .	70	28	40		6	9		34	49
TOTAL .	2,136	1,206	56		268	13		1,474	69

*Percentages are to the total marketable surplus.

The above table indicates that the entire marketable surplus in the States of Maharashtra and Madras is brought to the assembling markets for sale. This is owing to the existence of well organised markets in the assembling centres around the producing areas in these two States. In Orissa State, a slightly smaller proportion, amounting to 72% of the marketable surplus, is assembled for sale in the different assembling markets. In Kerala and Andhra Pradesh only 49% and 40% respectively of the marketable surplus is assembled in the assembling markets. As stated earlier, this is explained by the fact that a substantial volume of the produce from these two States enter distribution without passing through the assembling markets.

(b) *Share of different agencies.*—The foregoing table also indicates that growers and village merchants are the two agencies bringing the produce for sale to the assembling markets. Bulk of the produce assembled in the markets in all the major producing States except Orissa is brought by the growers themselves, the share of village merchants in the assembling of turmeric being negligible. In Orissa State, however, village merchants are responsible for assembling the bulk of the produce in the assembling markets, the share of the producers in this State being insignificant.

(c) *Buyers in the assembling markets and their share.*—Turmeric that is brought for sale in the various assembling markets is purchased by different classes of buyers such as wholesale merchants at assembling markets, merchants from distributing markets, *pucca adatyas* and exporters. These different categories of buyers often combine the function of more than one category and also often change their role depending on prevailing market conditions. It is, therefore, extremely difficult to apportion the quantities purchased by each of these agencies separately. However, based on the data and information collected during the present survey, the relative share of these buyers has been estimated and is given in the following table:

TABLE 38

Agencies and their percentage share in the purchase of turmeric brought for sale in assembling markets (1960-61)

State	Quantity brought for sale in assembling markets ('000 mds.)	Purchased by				Total (percentage)
		Merchants at assembling centres (percentage)	Forwarding agents (percentage)	Merchants from distributing markets (percentage)	Exporters (percentage)	
Andhra Pradesh	362	58	42	..	..	100
Maharashtra	562	65	33	2	..	100
Orissa	216	80	10	10	..	100
Madras	300	69	9	..	22	100
Kerala	34	84	..	..	16	100
TOTAL	1,474	66	27	2	5	100

It may be seen from the above table that of the four categories of buyers in the assembling markets, merchants at assembling centres are the most important agencies purchasing nearly 66% of the total quantity brought for sale in the assembling markets, thus giving strength and character to the marketing of turmeric in the assembling markets.

Pucca adatyas, whose function is to purchase turmeric on behalf of their principals in the distributing markets on commission basis, are next in importance. They are found to operate mainly in the markets of Andhra Pradesh and Maharashtra and to a lesser extent in the markets of Orissa and Madras. They account for the purchase of 27% of the total quantity brought for sale in the assembling markets.

Exporters to overseas markets also make direct purchases in Cochin and Alleppey markets in Kerala State and in Erode and Karur markets in Madras State. Their share in the total purchase of turmeric from assembling markets is however not significant and amounts to only 5%.

Merchants from distributing markets also sometimes visit and effect purchases in assembling markets in Orissa and Maharashtra States. Their share in the total purchase is very small, being only 2%.

(d) *List of markets, their organisation and control.*—There are, in India, about 21 markets important for assembling of turmeric. The list of these markets together with the average volume handled in each of them may be seen in Appendix XXV. The importance of these 21 assembling markets can be appreciated by the fact that over 70% of the total marketable surplus of this commodity is handled in these markets. These are distributed in the five major producing States of Andhra Pradesh, Maharashtra, Orissa, Madras and Kerala, the largest number being in Andhra Pradesh.

Of the important assembling markets for turmeric listed in Appendix XXV, some are regulated, while others are not. The position of regulation of markets in each of these States is briefly described below:

(i) *Andhra Pradesh*: In Andhra Pradesh, regulation of markets is enforced at present under two Acts. The Madras Commercial Crops Act, 1933, is in force in the entire Andhra region of the erstwhile composite State of Madras, while in the Telangana region of the erstwhile Hyderabad State, the Hyderabad Agricultural Produce Markets Act (Fasli 1339) is in force. A unified Act common throughout the State is, however, expected to be brought into force shortly in this State.

Turmeric has been included as a notified commodity in Cuddapah since 1956 and in Guntur and Krishna from 1959-60. In Nizamabad market in Telangana area, however, turmeric has been a notified commodity even since 1937. Although market committees with necessary staff have been functioning in all the above four centres, they do not even have proper market yards for the assembling and sale of the produce. The market charges prescribed by these committees are not also vigorously enforced. In the absence of any market yard the market committees are not in a position to effectively supervise and regulate the market practices.

(ii) *Maharashtra*: All the important assembling markets for turmeric in Maharashtra, viz., Sangli, Takari, Karad, and Tasgaon are regulated under the Bombay Agricultural Produce Markets, Act, 1939. Sangli, the biggest assembling market for turmeric in India was regulated in the year 1950 and is having its sub-yards at Miraj and Jath. The Market Committee at Sangli and its sub-yards are functioning effectively and handle as much as 3 lakh maunds of turmeric annually.

(iii) *Orissa*: Market regulation has been introduced in Orissa State only in recent years. The first market to be regulated for the marketing of turmeric is Tikkabali, regulated in November 1959. This market is having a market yard and has also prescribed the market charges payable by sellers and buyers. The Market Committee and its sub-yard at Udaigiri handle about 12,000 maunds of turmeric every year.

(iv) *Madras*: Market regulation in Madras State was introduced as early as 1933 under the Madras Commercial Crops Act and the first regulated market was started at Tirupur in 1935 under the Coimbatore Market Committee. Turmeric was added to the notified commodities in 1957 but the enforcement had to be postponed by Government till the end of 1961 on representation made by turmeric traders. The Coimbatore Market Committee has been trying to establish a regulated market yard for turmeric at Erode, one of the most important assembling markets for this commodity, but this important measure is getting delayed again and again due to opposition from turmeric trade there. A new Act, namely, "The Madras Agricultural Produce Markets Act" has since been passed in this State and rules thereunder are being framed. With the implementation of this Act it is hoped turmeric will also be brought under its purview in this State.

(v) *Kerala*: In Kerala State, regulation of markets is enforced only in the old Malabar region of the erstwhile composite State of Madras. Turmeric, however, has not been included as a notified crop under this Act here. Necessary legislation to regulate the markets in this State is being finalised.

The foregoing discussions clearly indicate that it is only in Maharashtra that all the important assembling markets for turmeric are regulated and are functioning properly. In Andhra Pradesh, market committees, though in existence, are not able to function effectively. The Orissa State has introduced regulation only in one centre. In Madras State turmeric is yet to be brought under the regulatory orbit. The same position is true in respect of Kerala also. All these clearly point to the immediate need for bringing more and more markets under regulation and also for the effective enforcement of the provisions of the Act if the growers are to be provided with proper facilities to sell their produce and obtain competitive prices.

In most of the non-regulated markets, there are local associations of traders and commission agents who generally regulate the market practices. Such trade associations of turmeric dealers are found to function in important assembling markets like Erode, Salem, Cuddapah and Duggirala and these associations are found to wield considerable influence over the trade in turmeric in their respective regions.

(e) *Assembling agencies*.—The various agencies engaged in the assembling of turmeric are commission agents, wholesale merchants and co-operatives. The services rendered by these agencies are described below:

(i) *Wholesale merchants and commission agents*.—These are the most important agencies who provide an important link between sellers and buyers in the assembling market and take an active part in the marketing of turmeric. As a rule, they are found to operate in all the assembling markets.

The number of commission agents in any one market generally depends on the volume of the produce handled in the market. In Sangli, which is one of the biggest assembling markets for turmeric,

there are as many as 170 or more of them. In markets like Erode, Cuddapah and Karur their number varies from 30 to 40. In small markets like Takari in Maharashtra, Tikkabali in Orissa, and Alleppey in Kerala there are only 10 to 15 commission agents. They perform a number of functions. After the produce is brought to their premises, the commission agents contact the intending purchasers, show them the samples and negotiate the price on behalf of the sellers and settle the deal. They supervise weighment and delivery and make payment to the sellers after deducting all the marketing expenses including their commission. They assume the responsibility for the payment to the sellers soon after they dispose of the produce even though they may collect the sale value from the buyers at a later date. They provide storage facilities to the sellers who may wish to wait for a better price in the market. They also advance loans to the sellers on the security of the produce deposited with them for sale. In some centres like Sangli in Maharashtra, Erode in Madras and Cuddapah and Nizamabad in Andhra Pradesh, the commission agents give loans on interest to the growers to meet their cultivation expenses and other financial needs. In such cases, it is customary for the producers to sell only to that commission agent from whom they have taken the loan. It is also the practice in some markets like Erode, Salem, Karur, Cuddapah, etc., for the commission agents to provide gunny bags to the growers for bringing turmeric to the market, for which they may or may not collect hire charges. Even though it is not obligatory on the part of the sellers to dispose of their produce through commission agents, it is noticed that the sellers invariably prefer to do so owing to established financial relationship with them.

In addition to performing the foregoing functions, they may also effect purchases of turmeric on their account. It may be pointed out that in such cases they do not purchase the produce brought to their own premises for sale but do so from other sellers. Such a class of commission agents is found to operate in Sangli, Nizamabad and to a smaller extent in Cuddapah and Erode markets.

(ii) *Co-operative societies*.—Co-operative societies in assembling centres, wherever they exist, also act in the same manner as commission agents with the primary object of disposing of the produce brought for sale by the producer-member. The functions and services rendered by the co-operative societies are also more or less similar to those of the commission agents.

Among the five major producing States, it is only in the States of Maharashtra, Madras and Orissa that co-operative marketing societies have been formed and are handling turmeric to any appreciable extent at present. In Andhra Pradesh and Kerala the share of the co-operative marketing societies in the volume of turmeric handled in the assembling markets is, however, very insignificant.

The role of the co-operatives in the marketing of turmeric in these three States is briefly discussed below:

Maharashtra.—In this State, co-operative marketing societies handling turmeric are functioning in the assembling centres of Sangli,

Karad and Tasgaon. At Sangli, there are two co-operative societies: the Varana Valley Co-operative Purchase and Sale Society Ltd. and Shri Ganapathy Co-operative Purchase and Sale Society Ltd. There is also a branch at Sangli of the Karad Co-operative Purchase and Sale Society. These three co-operative societies together handled about 10% of the total annual arrivals of turmeric in this market during 1960-61.

At Tasgaon, there is one co-operative society handling turmeric, the Tasgaon Taluk Co-operative Purchase and Sale Society Ltd. In addition, the two co-operative societies at Sangli are also having their branches at Tasgaon. All these three societies handled about 5,400 standard maunds of turmeric amounting to 32% of the total arrivals into this market during 1960-61. There are four co-operative marketing societies handling turmeric at Karad centre which together handled about 15% of the annual arrivals of turmeric in this market during 1960-61.

The co-operative societies in all these centres are having their sale premises within the market yards of the regulated markets alongside the other commission agents.

Orissa: The Agency Marketing Co-operative Society Ltd. in Tikkabali is the only society in this State handling turmeric. Most of the turmeric cultivators in this area are ignorant tribal people who are often exploited by village merchants. In order to provide financial assistance and marketing facilities to these tribals, a co-operative society was started in the year 1947. Later on, as it was found necessary to enlarge the scope of the society to include the marketing of other agricultural and minor forest produce also the society was renamed in 1949-50 as the Tikkabali Agency Marketing Co-operative Society Ltd. This society advances loan to the members at 8% interest and later collect turmeric from its members, and also effects purchases from the open market. It has four processing centres for traders in the producing areas in Beligunda subdivision of Phulbani district. Besides, it has its own sale depot at Berhampur through which the turmeric is finally disposed of. This society handles nearly one-third of the arrivals of turmeric in this market. The quantity of turmeric handled by this society during the years 1958-59 to 1960-61 is given below:

	Quantity handled (in standard maunds)
1958-59	1,765
1959-60	1,890
1960-61	2,130

Madras: In Madras State, there are four co-operative societies handling turmeric at present. Of these, three are in Coimbatore district located in the turmeric growing centres of Erode, Gobichettipalayam and Bhavani. The fourth society is at Karur in the Tiru-

chirapalli district. The number of members, the quantities of turmeric handled, and the commission earned by each of these societies during 1960-61 are given below :

Name of the Society	Year of starting	No. of members (1960-61)	Quantity of turmeric handled (1960-61)	Value of produce handled (1960-61)	Commission earned (1960-61)
			(Mds.)	(Rs.)	(Rs.)
(1) The Gobichettipalayam Co-operative Sale Society, Gobichettipalayam . . .	1929	8,711	10,520	3,75,586	22,099
(2) The Bhavani Co-operative Marketing Society, Bhavani . . .	1957	722	2,996	1,23,317	5,169
(3) The Erode Co-operative Marketing Society, Erode . . .	1960	76	714	22,832	1,370
(4) The Karur Co-operative Marketing Society, Karur . . .	1929	2,891	Nil	Nil	Nil

The societies at Gobichettipalayam and Bhavani are also having their branches at Erode market where the turmeric of their grower-members is assembled and disposed of. All the three societies at Erode are members of the Erode Commission and Mandi Merchants Association and act as any other commission agent at Erode in the disposal of turmeric. The societies grant pledge loans to their grower-members upto 60% of the value of the turmeric brought by them for sale, charging interest at 6½%. The societies also supply gunny bags to their members for bringing turmeric. Storage facilities are provided and godown rent collected at 0.03 P. per bag per month. The society at Bhavani also effect outright purchases of turmeric from their members. All the three societies at Erode together handled 6.7% of the total arrivals in this market. The society at Karur has not been handling any turmeric during 1960-61.

The foregoing discussions clearly indicate that as regards co-operative marketing of turmeric much remains to be done in the producing States. Co-operative societies handling turmeric are only a few in number and the volume of the produce handled by them is very insignificant as compared to the total quantity marketed in the various assembling markets. As it is, the role of co-operatives appears to be restricted to performing the functions of professional commission agents even though the scope of their participation in the marketing of turmeric is very wide. It is obvious that in order to attract the turmeric cultivators into the co-operative fold, the co-operative societies should emulate the example of the commission agents and simplify the system of granting loans to the producers.

It is also necessary to organise more co-operatives for the marketing of turmeric in all the producing areas particularly in markets like Cuddapah where growers have to compete with powerful commission agents in the sale of their produce.

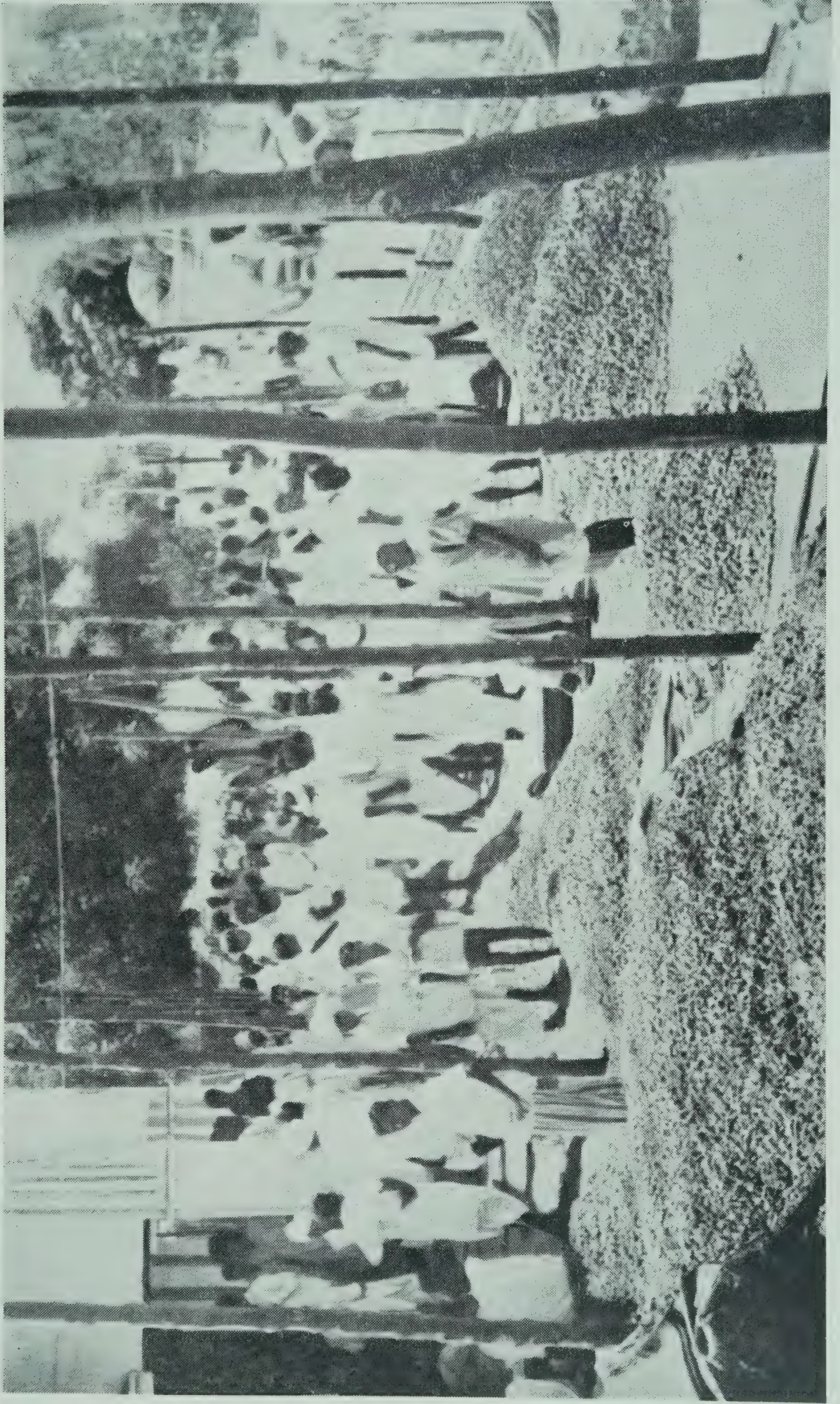
(iii) *Market functionaries : Brokers.*—In most of the assembling markets, the commission agents themselves arrange for the disposal of the produce brought by the producers. However, in some assembling markets like Cuddapah in Andhra Pradesh, Karur in Madras and Calicut and Cochin in Kerala, brokers are found to be operating. In all these centres, they generally act on behalf of the buyers and help in bringing together the buyers and the sellers, and in turn receive the brokerage either from the sellers as in Cuddapah and Calicut markets or from the buyers as in Karur and Cochin markets.

Weighmen.—In all the non-regulated markets, commission agents engage their own men for weighment of the produce. But in regulated markets, the weighmen may be the employees of the market committee or the commission agent and are licensed. They are expected to keep accounts of the quantities weighed by them and their work is subject to supervision by the market committee authorities. The charges for weighment are prescribed by the market committee in the regulated markets. They are paid in cash in most of the markets and the charges are borne generally by the sellers. In some markets like Salem and Erode, however, it is found that in addition to cash payment, they also take small quantities of turmeric in kind.

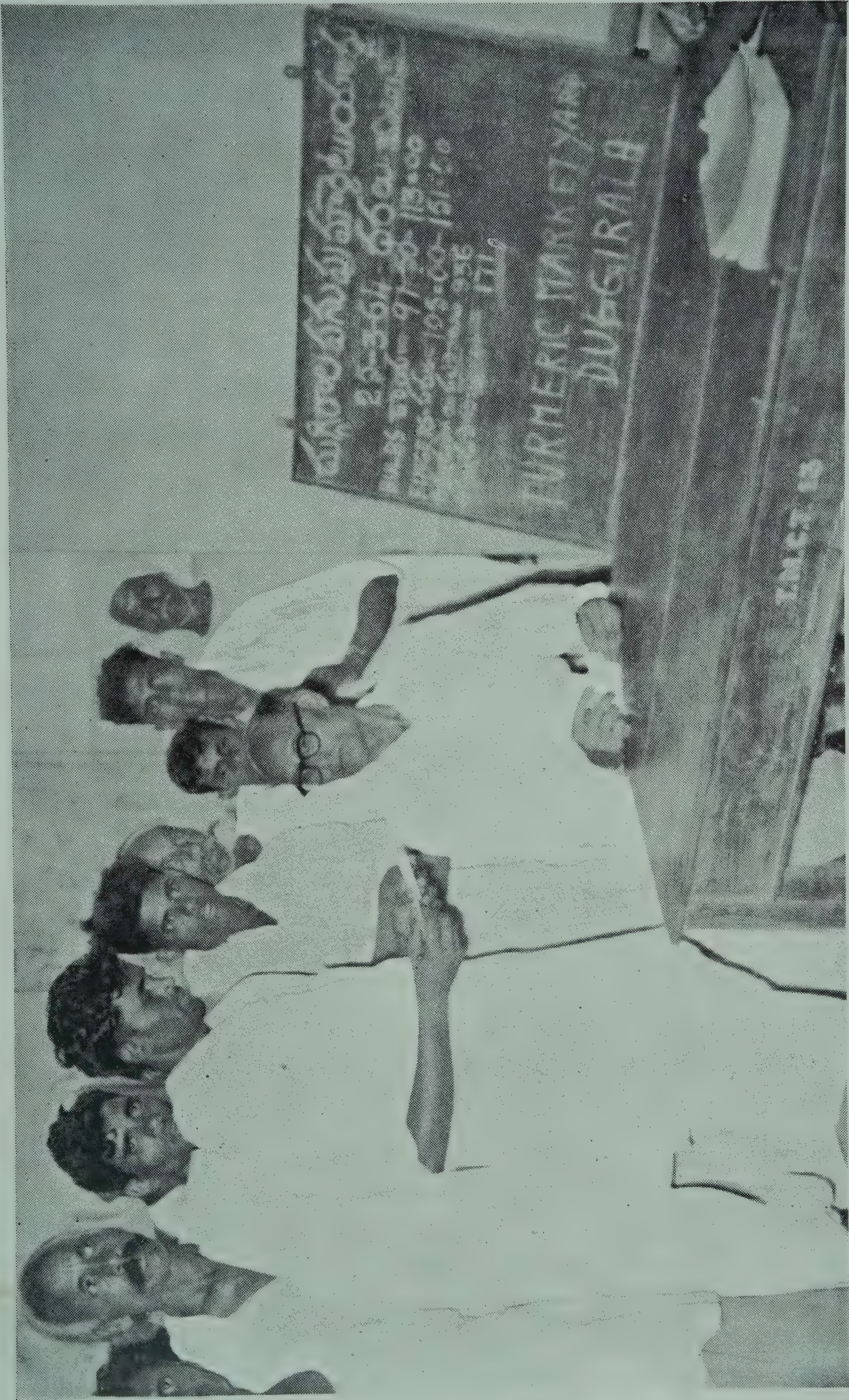
Hamals.—Handling of the produce in the assembling markets or at places of delivery is attended to by the hamals. They are mostly private individuals working on daily wages though in certain markets they may be regular employees of commission agents. Hamals are generally paid in cash either by the sellers or by the buyers or by both and it is also not uncommon for them to receive their payments in kind. In regulated markets, their charges are prescribed by the market committee.

(f) *Systems of sale.*—Open auction and open agreement are the two important systems of sale followed in respect of turmeric in most of the assembling markets in India. Of these, sale by open auction is followed with slight variations in the markets of Andhra Pradesh and Maharashtra and in Salem and Erode markets of Madras State while open agreement system is practised in the States of Orissa and Kerala and in Karur market of Madras State. These two systems of sale are briefly described below :

(i) *Open auction.*—This method of sale is prevalent both in regulated markets like Sangli, Karad, Nizamabad, etc., and also in non-regulated markets like Cuddapah, Erode, Salem, etc. Under this system, the turmeric brought by the producers or village merchants for sale to the commission agents is separately auctioned by lots and is sold to the highest bidder from amongst the buyers participating in the auction, after the consent of the seller is obtained in regard to the price. Before auction, the produce of each seller is generally either heaped up or exhibited in open bags in front of commission agents' shops for examination of the quality by the buyers. In Erode market, however, only representative samples from each lot of turmeric, weighing not less than 15 lbs., are taken to a common market place by the commission agents for assessment of the quality by buyers. Generally the auction commences and is



Heaps of turmeric ready for auction (Duggirala market in Andhra Pradesh)



Transaction going on in the turmeric market yard at Duggiala (Andhra Pradesh)

carried on between certain fixed hours although during peak seasons, when arrivals are heavy, the auction may be continued throughout the day. The auctions are conducted by the commission agents in front of their shops both in regulated and non-regulated markets, but in the regulated markets the auctions are supervised by the market committee authorities who also record the weight of each lot and obtain the signatures of both sellers and buyers in the bill register after the auction of each lot is completed. As stated above, in Erode market the auction takes place in a common yard and not in front of the commission agent's shop. It may be noted that while in all the markets the prices are offered after the buyers have examined the entire lot, at Erode the prices offered are on the basis of samples only. Whenever the sellers are not agreeable to the price offered for their lot on a particular day, the lot may be retained for auction on the next day. In such cases, the unsold lots are kept overnight in the shops of the commission agents.

After the auction is completed and the deal settled, the commission agents arrange for the weighment and delivery of the produce to the buyers. The buyers arrange for the packing material and also for the removal of the produce from the commission agent's shop. The commission agent makes payment to the sellers the same day after deducting various charges including his commission and collects the sale amount from the buyers later as mutually agreed upon.

(ii) *Open agreement system*.—In markets where the arrivals are comparatively little, the open agreement system of sale of turmeric appears to be followed. This is a very simple system of sale under which the buyers, after examining the lots offered for sale, negotiate with the sellers and settle the price. Except for this difference in the manner of settlement of price, the procedure for weighment, delivery, payment, etc., are just the same as described under the open auction system. However, in Cochin and Calicut markets the sellers have to arrange for the delivery of the produce after sale at the buyers' premises where weighment also takes place.

(g) *Market charges*.—The buyers and sellers of turmeric have to pay in cash and sometimes also in kind for various services while selling or buying in assembling markets. These charges include commissions for commission agents, brokerage, charges for weighment and handling, municipal tolls and taxes and customary trade allowances, etc. The rate of commission payable to commission agents is fixed on the basis of either the value or the weight of the produce. Similar also is the case with other charges like brokerage, etc. These charges may again be payable by sellers or by buyers in some markets and by both in some others.

The market charges as prescribed and collected in important assembling markets are indicated in Appendix XXVI. As may be seen from the appendix, as many as eight to ten items of market charges are payable by the sellers or buyers in almost all the markets. Of these charges, however, the commission payable by the sellers forms the biggest single item of charge in all the markets. The market charges payable by the sellers and buyers for marketing hundred rupees worth of turmeric have been worked out for the purpose of

comparison and are given in Appendix XXVII, a summary of which is also given below :

TABLE 39
Total market charges payable in different assembling markets
(1960-61)

(For Rs. 100 worth of turmeric)

State	Total market charges payable in			
	Regulated Markets		Non-regulated markets	
	Market	Rs. P.	Market	Rs. P.
Andhra Pradesh	Nizamabad	2·25	..	..
	Cuddapah	5·60	..	..
Maharashtra	Sangli	2·16	..	..
	Karad	2·16	..	..
	Tasgaon	1·50	..	..
Orissa	Tikkabali	1·72	Berhampur	3·43
Madras	..	..	Erode	8·02
	..	..	Karur	3·14
	..	..	Salem	2·93
Kerala	..	..	Calicut	3·73
	..	..	Cochin	3·39
	..	..	Alleppey	3·15

It can be seen from the above table that except in Cuddapah market the total market charges in all the regulated markets are lower than those in the non-regulated markets. Though Cuddapah market is regulated, the total charges payable are very high amounting to as much as Rs. 5·60 as compared to the charges in other regulated markets which vary from Rs. 1·50 to Rs. 2·25 only. This is because of the fact that in this market, the commission agents continue to collect various customary charges as were prevailing before the regulation of the market. This practice is irregular and needs to be checked so that the producers may derive full benefits of the regulation of markets.

Among the non-regulated markets the total charges vary from Rs. 2·93 at Salem to Rs. 8·02 at Erode, which is the highest in all the markets for turmeric in the country. The high incidence of market charges at Erode is due to high commission charges amounting to 6½%, as compared to 1½ to 3% in other markets.

The growers sometimes derive definite advantages by way of lower market charges in disposing of their produce through co-operatives. For example, in Erode and Karur markets the total market charges for sale of Rs. 100 worth of turmeric through co-operatives amounts to Rs. 6·65 and Rs. 1·62 respectively as against Rs. 8·02 and Rs. 3·14 respectively when sold through commission agents.

(h) *Cost of assembling.*—The cost of assembling turmeric in different centres is further discussed in the next chapter on “Marketing Costs and Margins”.

B. Distribution

(1) AGENCIES AND METHODS

The various agencies engaged in the distribution of turmeric are :

- (a) Merchants at assembling markets.
- (b) Exporters.
- (c) Forwarding agents.
- (d) Wholesale merchants at distributing and consuming markets.
- (e) Retail merchants.

The part played by each of these agencies and the methods followed by them in the distribution of turmeric are briefly described below :

(a) *Merchants at assembling markets.*—Merchants at assembling markets are the most important single agency purchasing the bulk of the marketable surplus of turmeric available in the producing areas. After purchasing the turmeric, they prepare it for despatch to the various distributing or consuming markets by sorting, grading, polishing, etc., according to the preferences in those markets. They despatch the produce to the different consuming and distributing centres generally on consignment basis and rarely on order basis. In important distributing markets like Calcutta, Bombay, Delhi, Amritsar and Kanpur, there are many commission agents who deal in turmeric and through whom most of the merchants at assembling markets dispose of the produce. These commission agents may also deal in spices and other agricultural commodities. Due to the special difficulties experienced in storing at distributing centres, turmeric is despatched to these centres only in lots of 100 to 150 bags at a time from the assembling centres and further despatches are generally made only after these are sold. The consignments, however, continue to be despatched to the distributing centres almost throughout the year.

The commission agents at the distributing centres periodically inform the merchants at assembling centres about the ruling rates and market conditions and dispose of the produce according to the instructions of the merchants. Generally, 60 to 70% of the value of the produce is paid to the merchants by the commission agents, against railway receipts. The commission agents remit the balance after the produce is sold, deducting the expenses including their commission. Certain merchants prefer to have running accounts with the commission agents and settle their accounts periodically.

Some merchants in assembling markets, like Ravulapalem in Andhra Pradesh, have their own representatives at Calcutta. These representatives keep in close touch with the market conditions in the distributing markets and regularly send advice reports to their

employees. The merchants at the assembling centres rely on these advice reports when they issue to their representatives instructions regarding disposal of stocks of turmeric held with the commission agents. They may sometimes authorise these representatives to directly act on their behalf in regard to the disposal of the produce.

The merchants at Erode, however, instead of having their representatives individually, have a common representative at Calcutta to look after their interests and also to advise them about the market conditions and ruling prices. For the services rendered the representative is paid commission at Rs. 0·37 P. per bag of 140 lbs. of turmeric sold with his help.

From the assembling markets small quantities of turmeric are despatched on order basis also to wholesale merchants at a number of up-country markets. However, as already pointed out, the total quantity sold on order basis is very small as compared to the quantities despatched for sale on commission basis.

The merchants at assembling markets in Madras State send their representatives to important consuming centres like Bangalore, Coimbatore and Mysore and obtain orders from a number of dealers in these markets after which a consignment of turmeric is despatched to these centres and distributed amongst these wholesale merchants.

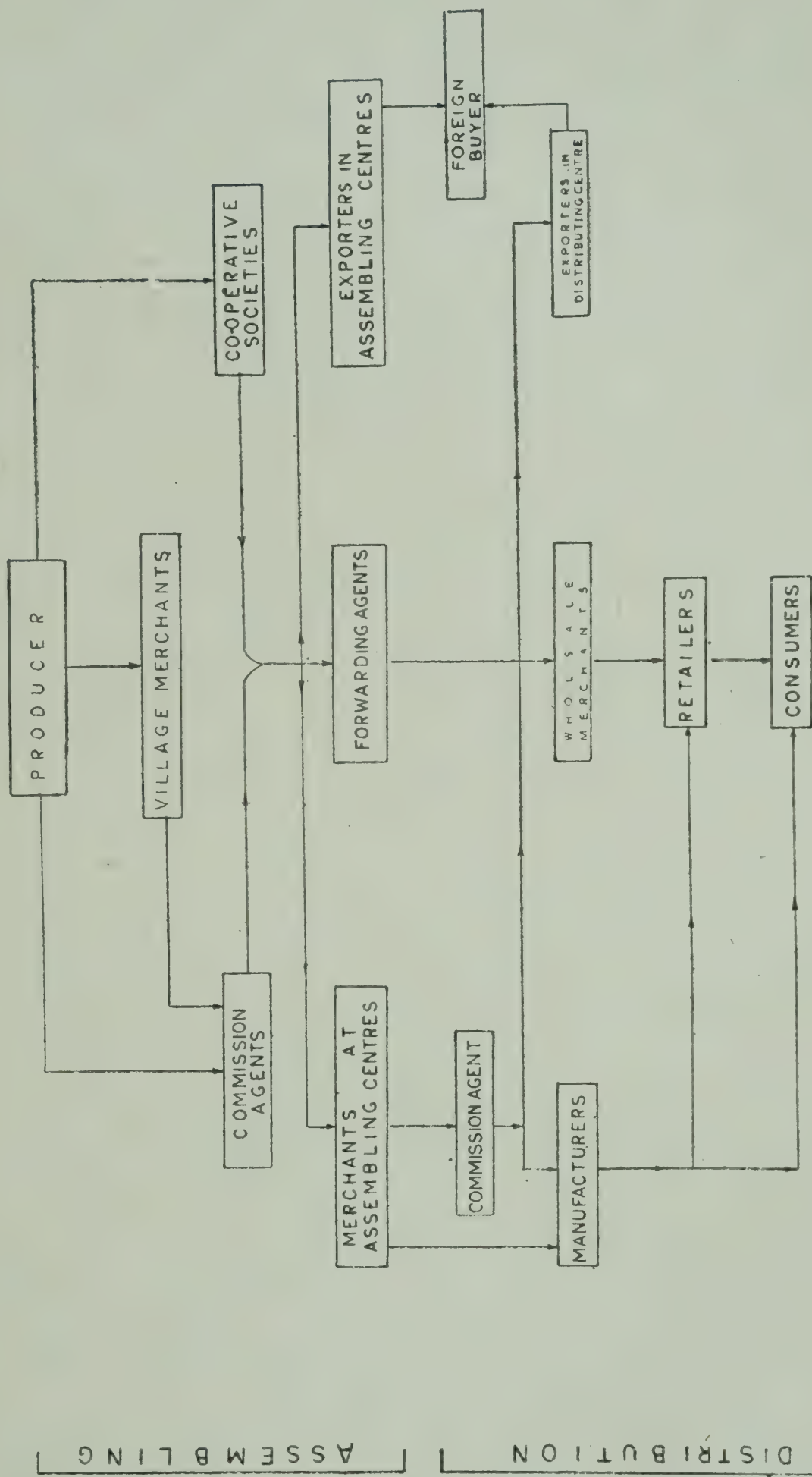
(b) *Exporters*.—Exporters purchase turmeric with a view to exporting it to foreign markets and as such the quantities purchased by them do not figure in the distribution within the country. Exporters operate mainly in port towns like Bombay, Madras and Cochin and also in the assembling centres like Calicut, Alleppey, Erode and Karur. The exporters at assembling markets purchase turmeric locally and despatch the produce to foreign buyers after further processing and grading.

The exporters operating in port towns get their supplies of turmeric either from the commission agents in the port towns or from their forwarding agents in important assembling centres. Turmeric purchased from the assembling markets on their behalf is first prepared for exports and then despatched to the exporters ready for export.

Bulk of the exports to foreign countries is sent on firm order basis and only small quantities are exported for sale on consignment basis. The exporters usually maintain regular contact with agents or brokers in the importing countries through whom orders for shipment are settled.

The buyers in the importing countries may place orders with the exporters in India either directly or through their indenting houses in London or U.S.A. For orders placed through these indenting houses, the exporters have to pay commission at $2\frac{1}{2}$ to 5%. The exporters usually enter into contracts on the terms prescribed by the foreign buyers; and for trade with U.K., the agreement form prescribed by the London General Produce Brokers Association is adopted, while for trade with U.S.A. the agreement form prescribed by the American Spices Trade Association is followed. In the export trade of

CHANNELS OF ASSEMBLING AND DISTRIBUTION OF TURMERIC IN INDIA



turmeric, orders are placed and prices settled on the basis of description only. The invoice of the exporter is bought by his bank and the amount credited to his account, the bank in turn realising the amount from the importer. The final payment is settled only after the consignment is examined and weighed at destination. Disputes, if any, are settled by arbitration as prescribed under the contract terms. Exports to U.S.A. are usually on C.F. basis, while for other countries these are mostly on C.I.F. basis.

(c) *Forwarding agents*.—Forwarding agents operating in the assembling markets like Cuddapah, Sangli and Erode, purchase turmeric in these markets on behalf of their principals who may be either exporters or wholesale merchants at the distributing or consuming markets. These forwarding agents get detailed instructions from their principals regarding the quantity and quality of the turmeric, the prices at which to be purchased and the nature of processing and grading to be done. They make purchases on the basis of these instructions in the assembling markets and despatch the same to their principals after doing necessary processing. For the services rendered, they receive commission from their principals at 1 to 2% on the purchase price of turmeric.

(d) *Wholesale merchants at distributing and consuming markets*.—The wholesale merchants at distributing markets like Bombay, Calcutta, Delhi, Kanpur and Amritsar purchase turmeric from the commission agents in these markets usually with the help of brokers. After purchase, they do not generally do any grading or processing and distribute the turmeric through retailers in the local markets or despatch it to wholesalers in smaller consuming markets, mostly on order basis. The wholesale merchants themselves may sometimes visit the assembling markets and effect direct purchases and take it for distribution. This practice is observed only in a few assembling markets in Maharashtra and Orissa.

The wholesale merchants in small consuming markets generally get their supplies from the wholesale merchants in the distributing markets on order basis. They may also have direct contact with commission agents in distributing markets with whom they place orders periodically to meet their requirements.

The wholesale merchants in the consuming markets sometimes also obtain their supplies direct from the merchants at assembling markets. Such purchases are made on order basis and in small quantities.

It was noticed during the present survey that this method of distribution is increasingly followed by the wholesale merchants in many consuming markets on account of the obvious advantage this method offers by way of reduced cost of distribution.

The wholesale merchants at distributing and consuming markets generally do not deal exclusively in turmeric. They have been found to handle other agricultural commodities also.

(e) *Retailers*.—Retailers are the most important agency in the distribution, through whom the consumers obtain their requirements of turmeric. They are generally small shopkeepers dealing in all

household articles like rice, pulses, oils and other provisions. They get their supplies of turmeric from local wholesale merchants usually in very small quantities ranging from 10 to 100 lbs. at a time.

The retailers do not undertake grading or processing, nor do they incur any expenditure before distributing the produce to the consumers. Turmeric is a commodity which is generally purchased by the consumers only in very small quantities ranging from $\frac{1}{4}$ th to 1 lb. at a time.

(2) COST OF DISTRIBUTION

The various expenses incurred in carrying the goods from the point of its assembly to the consumers are collectively known as its cost of distribution. In the distribution of turmeric, the two most important items of expenditure are the cost of transporting the produce and the different market charges payable at the distributing centres. As already pointed out, turmeric often has to be carried over long distances from the assembling areas to the consuming centres. For instance, from the assembling markets like Erode in Madras State it moves to markets like Amritsar in Punjab State, traversing the entire length of the country at a heavy cost of transportation.

Bulk of the turmeric from the assembling centres is sent for distribution through commission agents in important distributing markets like Bombay, Calcutta and Delhi. For disposing of the produce, the commission agents in these centres collect a number of charges in addition to their commission. Some of these charges like "dibba", "dharmadha", discount to buyers, etc., are collected without any apparent justification. In Calcutta market, the commission agents collect charges on as many as 21 different items amounting to nearly 7 to 8% of the sale price of the produce.

The cost of distribution of turmeric in different centres and its effect on the consumer's price and on the producer's return are discussed in detail under the chapter "Marketing Costs and Margins".

C. A Note on the Marketing of Manufactured Products

It is estimated that nearly 70% of the annual production of turmeric is utilised within the country as condiment in various meat and vegetable preparations. To be utilised as a condiment, turmeric has to be ground into powder form and added to the preparations for imparting the desired colour and flavour. The general practice for the housewives hitherto has been to purchase turmeric from the markets in the form of bulbs or fingers and grind them into powder as and when required for use in their houses. But a definite change has been noticed in recent times for the consumers to prefer their requirements of turmeric in the ready-made powder form rather than in the form of bulbs or fingers. This shift in the consumers' preference has been particularly perceptible in all the urban areas, and the turmeric powder manufacturing industry is, therefore, fast developing in the country.

Turmeric powder forms an important ingredient in a variety of culinary recipes and in the manufacture of curry powder which has an increasing demand both in the internal and in the foreign markets.

The manufacture and distribution of turmeric powder and curry powder are briefly discussed below.

(1) TURMERIC POWDER

Organised units manufacturing turmeric powder on a commercial scale are relatively few. They are confined to a few major cities like Calcutta, Bombay and Madras. There are, however, innumerable small retailers in all the consuming centres who get small quantities of turmeric converted into powder form in local grinding mills and cater to the needs of that section of consumers who prefer to get their supplies of turmeric in the powder form. It is not possible to have any fair estimate of the quantities of turmeric converted into powder form by these innumerable unorganised retailers found all over the country. It may, however, be stated that in this type of manufacture and distribution of turmeric powder, no special marketing problem is involved.

Detailed information on the number of organised units manufacturing turmeric powder in the country, their location, total annual production of turmeric powder, etc., is not available. During the present survey enquiries were made from some powder manufacturing units in Madurai, Hyderabad and Bangalore and the information gathered indicates a general idea about the production and distribution of turmeric powder.

In these three centres there are in all 35 powder manufacturing units, 10 each in Madurai and Hyderabad and 15 in Bangalore. Together, these units manufacture annually about 12,000 maunds of turmeric powder. The units at Madurai and Bangalore get their requirements of turmeric from Erode market, while the units at Hyderabad purchase turmeric in the local market. For powder manufacture, turmeric only in the unpolished form is used. Owing to their comparative cheapness, bulbs are preferred to fingers by these manufacturers.

Turmeric is well dried before it is powdered. Electrically driven machines known as "disintegrator" are used for powdering turmeric. Disintegrators of varying capacities are in use. However, medium-sized machines capable of powdering 40 kgs. of turmeric per hour are commonly used. Each powder manufacturing unit usually operates with only one such machine which costs approximately Rs. 900. The machine requires a motor of 10 H.P. and can conveniently be handled by a single man. Turmeric being fibrous in nature, requires to be ground twice or thrice in these machines before the powder of required fineness can be obtained. Turmeric powder, prepared in a large scale by using these disintegrators, are usually of 1/100 mesh fineness. The cost of manufacturing 1 maund of turmeric powder works out to about Rs. 2.50 to Rs. 2.75 and the wastage during the manufacture ranges from 5 to 8% of turmeric by weight. The manufacturing units at Madurai and Bangalore combine the manufacture of soap nut powder also in addition to the manufacture of turmeric powder. The units at Hyderabad manufacture various other ground spices like coriander, chillies, etc.

Turmeric powder manufactured by these units are marketed under their respective brands, packed in paper packets of varying sizes to

suit the consumers' requirements. Some units also use alkathene bags for packing turmeric powder. The usual packings are of 100 gms., 125 gms., 200 gms., 500 gms. and 1 kg. in metric units and also of *viss* and its sub-multiples upto 1/16 *viss*. Of these units, packets of 100 gms. and 200 gms. and 1/8 *viss* are more popular with the consumers. The retail price of turmeric powder varied from Rs. 1.20 to Rs. 1.50 per kg. during 1960-61. The powder manufactured by these units is generally distributed in and around the place of production and is rarely sent to other States. The manufacturers themselves attend to its distribution, the despatches to outside centres being always on order basis.

The information and data given above regarding the turmeric powder industry are not only meagre but also provide only a general picture of this industry as studied from only three centres. As stated earlier, consumers in general and those in urban areas in particular, prefer to purchase turmeric in the form of powder neatly packed in small packets. This shift in the consumers' preference has therefore a far reaching consequence on the future pattern of marketing of turmeric and, as a result, the turmeric powder industry is likely to expand in all the urban areas.

(2) CURRY POWDER

Turmeric forms an essential ingredient of various kinds of curry powder used in the preparation of curries. Curry powder is prepared by grinding clean and wholesome spices, such as black pepper, cinnamon, cloves, cardamom, chillies, turmeric, nutmeg, curry leaves and many aromatic herbs and seeds. In this mixture, turmeric usually constitutes nearly 6 to 8% by weight. Curry powder is in demand both within the country and in foreign markets. There is a large number of small scale manufacturers preparing curry powder in most of the States. They cater to the local demand for curry powder. But only a few deal in export trade and they are mainly concentrated in cities like Madras, Bombay and Calcutta. Detailed information regarding the production and marketing of curry powder is not available. It is, however, known that about 1,500 to 2,000 tons of curry powder valued at Rs. 35 to 40 lakhs are annually exported to various foreign countries from India. In Madras city alone there are 12 manufacturer engaged in exporting curry powder and their total exports amount to nearly 50% of the total exports from India.

U.K., Australia and Caribbean countries are the most important buyers of Indian curry powder. In recent times, the demand for Indian curry powder is on the increase both from these traditional buyers and also from other countries. In the present context of declining trend in the exports of turmeric, any increase in the exports of curry powder should be welcome. Turmeric being an important ingredient in curry powder, the demand for turmeric will increase to the extent exports of curry powder increase.

Prior to 1949, the composition by weight of Indian curry powder exported to U.K. and other foreign countries used to be: spices 70%, farinaceous substances 20% and salt 10%. This specification was amended in 1949 and U.K., the largest buyer of Indian curry powder, increased the content of spices to 85% and reduced the content of

farinaceous substances to 10% and that of salt to 5%. At present, curry powder exported to U.K., Australia and other countries generally conforms to this revised standard. For export purposes, curry powder is packed in airtight tins of different packings ranging from 28 lbs. to 112 lbs.

During the present survey, some of the exporters of curry powder reported that consignments of Indian curry powder were rejected by the importers due to higher metallic contamination than is permissible under the Food Laws. Sometimes, curry powder had also to be reconditioned at the destination involving additional expenditure to the exporters. It appears that with the machinery used at present for grinding various spices, a small amount of metallic contamination is unavoidable. It is said that this contamination could be eliminated by the use of roller mills supplemented with magnetic separators. The roller mills, however, are not manufactured in the country and have to be imported. The exporters are of the opinion that production of curry powder free from metallic contamination will be of great help not only in increasing the volume of exports of curry powder to the existing buyers but also in finding markets in other countries.

D. Finance

Finance is an essential requirement of all the agencies engaged in production and marketing of any commodity and so it is in the case of turmeric also. The various agencies providing finance in the assembling of the produce are village merchants, commission agents, merchants at assembling centres, co-operative societies and banks. In the distribution of turmeric, the financing is done mostly by the commission agents and scheduled banks. However, actual funds are provided to all these agencies only by the banks and by the indigenous bankers or shroffs. The role played by each of these agencies is discussed below :

Village merchants.—The system of village merchants advancing loans to turmeric cultivators appears to be prevalent only in the State of Orissa. In this State, turmeric cultivation is carried on mostly in the agency tracts and the growers in these tracts borrow money from the village merchants or “panoes” not only for the purpose of raising turmeric but also for purchasing articles of food and clothing, agricultural equipments, and livestock, etc. The village merchants, because of their longstanding, wield powerful influence in the villages. It is estimated that more than 60% of the growers in these areas obtain loans from them either in cash or in kind. The amount of loan given to each cultivator is usually small and repayment is accepted either in cash or in kind in the form of turmeric, the latter practice being more common. Generally, no interest is levied but this is more than made good by taking extra weight and paying low price at the time of purchase. Wherever interest is charged, the rate is very heavy varying from 35% to 40%. The method of advancing money to the growers specifically against the turmeric crop is rare and is practised only in some areas of Phulbani and G. Udaigiri taluks. In such cases, the borrowing commences 3 to 4 months before the harvesting season, with the stipulation that the produce should be sold to or through the creditor. The village merchants in turn are financed by the wholesale merchants at the assembling markets.

Commission agents.—Commission agents are the most important source of finance for the cultivators of turmeric in all the producing States. In certain markets like Cuddapah and Nizamabad in Andhra Pradesh, Sangli, Karad, etc., in Maharashtra, and also in Madras, the commission agents annually advance to the turmeric cultivators substantial amounts to the value of over Rs. 20 to 25 lakhs. Further, such loans are freely advanced to the growers at short notice and also as and when required without much formality and without insisting on securities. Being a ready source of finance to the growers, commission agents have a powerful hold on them. It is usually understood that whenever a grower takes loans from a particular commission agent, he should dispose of his turmeric only through his creditor. As almost all the turmeric cultivators in these areas have to depend on the commission agents for their financial requirements, they are obliged to market their produce only through these agents, which more often than not is to their disadvantage. Interest at rates ranging from 9 to 12% in Maharashtra and Madras States and from 12 to 18% in Andhra Pradesh is usually collected by the commission agents on the loan advanced by them.

The commission agents recover these loans with interest from the sale proceeds and pay only the balance to the cultivators.

Merchants at assembling markets.—Merchants at assembling centres like Duggirala and Ravulapalem in Andhra Pradesh advance loans to the turmeric cultivators for meeting their cultivation and other expenses and later effect purchase of turmeric from these growers. The loan amount, together with interest at 9 to 12%, is deducted before paying the sale value. This practice of advancing loans appears to be more prevalent in Godavari delta areas and not so much in Duggirala areas where the growers are comparatively well off.

In some assembling centres like Parlekimedi and Behampur in Orissa State, the merchants provide finance to the “panoes” or village merchants at 9 to 12% interest. The “panoes” in turn utilise the money so obtained to finance the turmeric cultivators in the villages. While giving loans to the “panoes” the merchants usually stipulate that the turmeric collected by the “panoes” from the villages should be sold to them.

In all other producing States, merchants at assembling markets do not act as a source of finance to the cultivators or other agencies.

Co-operatives.—Cultivators get financial assistance from co-operatives in two ways. Co-operative credit societies which function in almost all producing areas advance loans to the producers on personal security at rates of interest ranging from 6 to 9%. These loans are of short duration and are repayable in six monthly instalments usually after the disposal of the produce by the growers. In some States like Madras, the credit societies assist the growers in obtaining credit under the controlled credit scheme. The essence of this scheme is that through the co-ordination among village credit societies, the central bank and the marketing societies, credit is effectively linked with marketing.

In addition to these credit societies, co-operative marketing and sale societies also finance grower-members. Some of the marketing societies in the States of Maharashtra, Madras and Orissa also act

as commission agents for the sale of turmeric of their members. On the security of the produce deposited with them, the societies advance to the members 60 to 70% of the value of the produce charging interest at $6\frac{1}{4}\%$. These societies borrow funds from the central co-operative banks at $5\frac{1}{2}\%$ interest. The societies at Erode centre also issue pledge loans to the grower-members on the turmeric stored in pits in villages.

Although greater financial assistance to the growers is being made available in recent years by the co-operative organisations, their share in meeting the total credit needs of the growers is not very appreciable. The bulk of the credit needs of the cultivators still continues to be met by other agencies. This is mainly due to the procedural formalities and the attendant delays involved in obtaining the loans, and also due to various conditions imposed on the members in regard to security, etc. The co-operative societies should emulate the commission agents in this regard and try to simplify the system of advancing loans. The quantum of financial assistance provided should also be adequate and made available in time.

Banks.—Banks do not advance loans to cultivators or village merchants on personal security or on the security of crops. But they play a vital role in financing the turmeric trade by providing the much needed credit facilities to the commission agents, exporters and wholesale merchants. They provide over-drafts on personal security at 6 to 7% interest, and advance loans on the pledge of turmeric stored in pits and godowns, to the extent of 60% of the value on interest at rates varying from 6 to 7% in the case of turmeric stored in godowns and 8 to $8\frac{1}{2}\%$ when stored in pits. They also advance nearly 60 to 70% of the invoice value against Bills of Lading or Railway Receipts and upto 70% of the value of the produce stored in central and State warehouses against warehouse receipts charging interest at $5\frac{1}{2}$ to 7%.

Shroffs.—Shroffs are indigenous bankers of the country and they finance the internal trade in a number of agricultural commodities. They advance loans, just as the banks do, on stocks of produces, but formalities are fewer. They also provide loans on promissory notes and on personal security. Their main activity, however, is the discounting of 'Hundies' or Drafts and Bills of Exchange.

E. Futures Trade in Turmeric

(1) HISTORY OF FUTURES TRADE IN TURMERIC

Futures trading in turmeric has been carried on in India for many years. Sangli in Maharashtra State has a long tradition of futures trading in turmeric commencing from 1905. Apart from Sangli, futures trade in turmeric existed also in Karad, Amritsar and Ludhiana, even though Amritsar and Ludhiana were not important producing centres for turmeric. During the early years, there were no associations, and futures contracts were settled mutually amongst the traders. The first organised association for dealing in futures trade was the Sangli Forward Delivery Merchants' Association, Sangli, established in 1911. In 1948, the assets and liabilities of this association were taken over by the Sangli Forward Fixed Delivery Markets Association. Another association, the Sangli Mahajan

Association was started in the year 1930 but was registered under the Indian Companies Act only in 1947. Three more associations were established to conduct futures trading during the years 1942 to 1951 at Sangli. The Karad Forward Delivery Merchants Association, established at Karad in 1944, conducted futures trading for a few years but suspended their activities in the year 1952. In 1953, the Spices and Oil Seeds Exchange Ltd., Sangli, was started to conduct futures trading in turmeric and groundnut and its membership was drawn mostly from amongst the associations which were in the process of liquidation by that time. In other States, no associations existed for conducting futures trade in turmeric. Some merchants in markets like Erode, Duggirala, Nizamabad and Hyderabad attempted to organise futures trade in turmeric but failed due to lack of experience and non-fulfilment of commitments.

(2) REGULATION OF FUTURES TRADE IN TURMERIC

Futures trading in turmeric is at present being regulated under the provisions of the Forward Contracts (Regulation) Act, 1952, which was promulgated by the Government of India in December 1952. This Act, which was brought into force on 24th August 1953, is an enabling measure and provides for regulation of futures trading in turmeric and prohibition of options in goods. The main principle underlying the regulatory provisions of the Act is that forward contract should be allowed to be entered into only in accordance with the rules and bye-laws of recognised associations which have to work under the general supervision and direction of a special statutory authority, *viz.*, the Forward Markets Commission. The essential Supplies (Temporary Powers) Act, 1946, ceased to be operative in January 1955, but the ban on futures trading in turmeric continued throughout the country excepting in the then State of Travancore-Cochin under Section 17 of the Forward Contracts (Regulation) Act, 1952.

There were, however, persistent demands from the concerned associations for the removal of the ban and the resumption of futures trading in turmeric under the provisions of the Forward Contracts (Regulation) Act, 1955.

In response to these demands from the trade, the Forward Markets Commission investigated the need for the resumption of futures trading in turmeric and decided to permit the same.

Turmeric is a commodity which satisfies the essential requirements for being traded under 'futures contracts'. It is homogeneous in character and can conveniently be graded on the basis of definite quality characteristics. The production of turmeric is fairly substantial, being of the order of about 30 lakh maunds per annum. It can be stored underground in pits. There is also a steady and widespread demand for the produce within the country. In the absence of a well regulated machinery, the price of turmeric is likely to be influenced by purely local conditions. Consideration of these factors favoured the Forward Markets Commission to permit the resumption of futures trade in turmeric.

Accordingly, the Forward Markets Commission invited applications from associations in April 1955, but only two associations, *viz.*,

(1) the Spices and Oil Seeds Exchange Ltd., Sangli, and (2) the Cochin Hill Produce Merchants Association, Cochin, responded. Sangli being an important market for turmeric in India with necessary storage, banking and other facilities for trading in turmeric and in view of the long experience of the traders at the centre in the techniques of futures trading, the Forward Markets Commission recommended the recognition of Spices and Oil Seeds Exchange Ltd., Sangli, for conducting futures trade in turmeric for a period of 3 years. The Government of India accepted the recommendation and recognised this association for futures trading in turmeric, after the Exchange had carried out modifications in their bye-laws and working procedures as required by the Forward Markets Commission, first on a temporary basis, and on a permanent basis from 11th April 1960 onwards. This is the only association in India conducting futures trade in turmeric at present.

(3) WORKING OF THE SPICES AND OIL SEEDS EXCHANGE LTD., SANGLI

Futures trade in turmeric is conducted by the Exchange under their rules and bye-laws which should however be approved by the Forward Markets Commission. The Exchange, which has a total strength of 100 members, is managed by a Board of Directors consisting of 13 members, seven elected by the members of the Exchange, four nominated by the Government of India and two co-opted by the Board.

Different committees such as Daily Rates Committee, Trading Ring Committee, Clearing House Committee, Arbitrators Panel, Surveyors Panel, etc., are constituted by the Board under the bye-laws of the Exchange. Their duties and functions are also prescribed by the rules and bye-laws of the Exchange.

In addition, special *ad hoc* committees are also appointed by the Board as and when required.

For futures trade in turmeric the Exchange has adopted 'Rajapuri' quality as the basis variety and have prescribed the qualities of turmeric that are tenderable against the hedge contracts. Cuddapah, Duggirala, Nandiyal, Kodur, Nizamabad, Erode and Salem are the seven qualities of turmeric that have been recognised as tenderable varieties. The difference payable for tendering these qualities against the basis quality or 'tenderable difference' is also prescribed by the Exchange.

The transactions are carried on in the trading ring of the Exchange by the members, the unit of trading being 50 atkis (1 atki = 100 kgs.). The settlement of accounts or clearing is done on fortnightly basis through the clearing house of the Exchange. There are three hedge contracts, namely, Margashirsh, Vaishakh and Ashwin, the dates for the commencement for each of these contracts being fixed by the Exchange from year to year. Three up-country centres, namely, Karad, Cuddapah and Duggirala have been recognised by the Exchange as delivery centres. The allowances payable by the sellers giving delivery of the goods at these centres are prescribed by the Exchange for various hedge contracts. The following table indicates the allowances payable for up-country delivery during the Samvat year 2016 (1959-60).

TABLE 40
Allowances payable for up-country delivery

S. Y. 2016 (1959-60)

(Rs. per Atki of 100 kgs.)

Name of up-country centres	Marga- shirsh S. Y. 2016 delivery	Vaishakh S.Y. 2016 delivery	Ashwin S.Y. 2016 delivery
	Rs. P.	Rs. P.	Rs. P.
1. Karad	1.50	1.50	1.55
2. Cuddapah	2.00	2.00	2.05
3. Duggirala	2.00	2.00	2.05

In futures trading, actual delivery of the produce is not generally insisted upon and the contracts are settled by adjusting the differences between the purchase price and the sale price. Actual deliveries against futures contracts are, therefore, very small.

The volume of transactions in different forward contracts in turmeric and the quantities actually delivered against each of them during the years 1957-58 (Samvat year 2014) to 1959-60 (Samvat year 2016) are given in Appendix XXVIII. It will be seen from this appendix that except in respect of the contract Ashwin S.Y. 2014 when 2.9% of the total volume of transaction was actually delivered, in all other contracts the actual delivery was negligible, the quantities varying from only 0.2% to 0.4% of the total volume of transaction.

The different tenderable qualities of turmeric delivered against various hedge contracts during the years 1956-57 (S.Y. 2013) to 1959-60 (S.Y. 2016) and their respective quantities are given in Appendix XXIX. It may be seen from the appendix that during all the hedge contracts, bulk of the turmeric actually delivered consisted of only "Rajapuri" quality and only very small quantities of other tenderable qualities were actually delivered.

The primary objective of trading in "futures" is to prevent violent fluctuations and provide an element of stability in prices. In the actual working, however, futures trade is capable of being misused by unscrupulous sections of the trade. In order to provide an effective check against such undesirable activities in futures trading, the Forward Markets Commission has been vested with adequate powers. In regard to futures trade in turmeric, emergent conditions prevailed in the markets on a few occasions which necessitated adoption of certain measures by the Forward Markets Commission. These have been discussed in detail under the chapter on Prices.

As the only association that has been recognised for conducting futures trading in turmeric, the Spices and Oil Seeds Exchange at Sangli should satisfy the needs of all the turmeric producing regions in the country. During the present survey, however, it was noticed that there exists a certain amount of dissatisfaction about the present

working of futures trading in turmeric among a section of turmeric trade, particularly in Andhra Pradesh. This is, however, known to the Forward Markets Commission and is engaging their attention.

F. Storage

As turmeric supplies are restricted to only a few months immediately after harvest, the produce has to be conserved to meet the demand from the consumers throughout the year. The storage of turmeric, therefore, forms an integral part of its marketing. The methods of storing turmeric during different stages of its marketing, the storage costs incurred and losses involved are discussed below:

(1) IN VILLAGES

In villages growers do not store turmeric except for use as seed. The seed material has to be stored for a period of about 3 to 4 months in the raw state. The harvested rhizomes are heaped and kept under the shade of a tree, sometimes over a layer of sand and covered with turmeric leaves. The heap is left undisturbed till required. In some places the heaps are plastered over with mud and cowdung. When the rhizomes are stored under the shade of trees, water is sprinkled once or twice, if there is no rain. During storage for a period of 3 to 4 months, the produce loses weight to the extent of about 5%.

Growers in centres like Duggirala in Andhra Pradesh who have substantial quantities of turmeric to market, resort to storing in pits in villages.

(2) IN ASSEMBLING MARKETS

Storage of turmeric in large quantities and for long periods takes place mainly in the assembling markets. As cured turmeric is highly susceptible to infestation, particularly during the monsoon season, turmeric is stored in airtight underground pits in many of these markets.

Pits of various sizes and shapes are dug in the specially selected sites which are usually in elevated areas to prevent waterlogging. The bottoms and sides of the pits are lined with different materials like thick twists of grass, straw, etc., and overlaid with date palm mats, after which turmeric is filled in up to the top and to a height of 3' to 4' above the ground level. Padding material is also spread over the turmeric and then the pit is closed with a final layer of thick earth. The pits being airtight, the weevils are not able to survive under the anaerobic conditions and thus cannot cause any damage to turmeric.

The pits are usually rectangular or circular in shape, the sizes varying according to the quantities of turmeric to be stored. From small pits of 6' × 3' × 4½' which can hold about 100 standard maunds of turmeric to as large a pit as 40' × 30' × 6' capable of holding upto 2,000 standard maunds are used in different centres. However, the usual capacity of a pit is about 400 standard maunds. Such pits once prepared are used year after year and a well prepared pit may last 10 to 15 years. Apart from such kuchcha pits, pucca circular pits capable of storing upto 1,500 maunds are also in use in the Sangli centre.

Only turmeric in the unpolished form can be stored in pits. Although turmeric could be stored in these pits upto a period of three years without much deterioration in quality, normally it is stored for a period of about one year only. Storing of turmeric in pits is completed before the onset of monsoon and pits are opened only after the cessation of rains. Once the pit is opened, the entire quantity of turmeric has to be removed and marketed.

Facilities for pit storage are available in almost all the important assembling centres for turmeric in the country. The following table indicates the total storage capacity available for storing turmeric in pits in different assembling centres.

TABLE 41

Estimated storage capacity available for storing turmeric in pits in important assembling centres in India (1960-61)

Name of the centre	No. of pits	Range of capacity per pit (maunds)	Total storage capacity (maunds)
Andhra Pradesh :			
Tenali	80	300—600	40,000
Duggirala	350	160—400	1,00,000
Cuddapah	330	250—540	1,45,000
Maharashtra :			
Sangli	250	1,000—1,400	2,70,000
Karad	150	250—500	60,000
Tasgaon	250	250—375	75,000
Takari	48	300—400	16,800
Madras :			
Erode	100	700—1,000	80,000
Salem	10	700—900	8,000
Karur	15	350—450	6,000

Storing of turmeric in pits is practised in all the assembling centres of Maharashtra, Madras and Andhra Pradesh (excepting Nizamabad). In the States of Orissa and Kerala, however, this practice is not in vogue. In Orissa, turmeric is stored in assembling centres in pucca godowns for periods upto one year. It is reported that due to the high essential oil content of turmeric produced in this State, the produce is not so susceptible to weevil infestation. A detailed study about this special characteristic of Orissa turmeric may, therefore, provide valuable information for evolving varieties resistant to weevil attack and should be undertaken by the State authorities. In Kerala State, the arrival of turmeric is confined to 2 to 3 months and almost the entire produce is exported to foreign countries before the commencement of the monsoon and, as such, storage of this produce does not form a problem in this State.

Studies conducted on the storage of turmeric above ground have indicated that storage losses can be minimised by dusting turmeric bags with organic dusts containing 0·1% pyrethrium at the rate of 4 oz. for 1 cwt. of stored produce. Fumigation with methyl bromide at the rate of 2 lbs. per 1,000 cubic feet over an exposure period of 24 hours or with ethylene dibromide at a dosage of 3 lbs. per 100 cubic feet over an exposure period of one week when carried out at 70°F also gives good results.

In some of the important assembling centres for turmeric, Central and State warehouses have been established where facilities for storing turmeric are also available. It is, however, noticed during the present survey that in most of the places storage facilities offered by the warehouses are not fully availed of. Pit storage appears to be preferred in all these centres and only a few bags have been stored in the warehouses. The following table shows the quantities of turmeric stored in some of the warehouses in assembling centres.

TABLE 42

Quantities of turmeric stored in different warehouses (1960-61)

Centre	Quantities (bags)	Average weight (per bag)	Total quantity (in quintal)
<hr/>			
Central warehouses :		Kg.	
Sangli	Nil	..	..
Nizamabad	1,072	90	964·8
State warehouses :			
Cuddapah	Nil	..	..
Salem	332	70	232·4
Erode	1,809	70	1,266·33
Karur	330	70	231·0

When stored in pits, the cost of storing of turmeric works out to about 0·50 P. to 0·65 P. per standard maund in all the assembling centres. Generally turmeric is kept under pit storage for a period of one year. However, depending on the demand, the pits may be opened and turmeric removed even after a few months. In the warehouses, storage charges are collected at the rate of 0·21 P. per 100 kgs. which works out to about 0·08 P. per maund per month. The relative economics of storage under pits and above ground will therefore depend on the period for which turmeric is anticipated to be stored. In other words, for short period storage storing in warehouses is more economical, while for long term storage pit storage is advantageous.

In the assembling centres of Maharashtra, the pits are owned by private persons who allow storage of turmeric for merchants on rent basis, the usual rent being Re. 1.00 per bag per year. In all other centres this system is not prevalent and the merchants themselves have to arrange for the pits.

Co-operative societies and commission agents in assembling centres generally provide storage facilities for short periods to the producers who bring their produce for sale through them and do not usually collect any charges for short period storage.

(3) IN DISTRIBUTING AND CONSUMING MARKETS

As stated earlier, turmeric is not generally stored in distributing and consuming markets in large quantities for long periods. Generally turmeric is despatched to these centres in small lots at regular intervals. These bags are stored in pucca godowns owned or hired for this purpose by the commission agents in these centres who collect storage charges from the sellers at the rate of 6 to 7 P. per maund per month. The wholesale merchants and exporters at Bombay, however, store their stocks in pits at Sangli after purchase and carry it to Bombay as and when required. Nearly 70% of turmeric stored in pits at Sangli belongs to these agencies at Bombay.

Storing turmeric above ground in the warehouses offers certain advantages. The stock can be stored in containers and taken out for marketing at short notice and also in small lots. This is not possible when stored in pits. Under pit storage, a small quantity of turmeric, amounting to 1.5% to 2%, at the bottom of the pit also gets discoloured, thus lowering its quality. This loss could however be minimised by storing turmeric in pucca concrete pits as is being done at present at Sangli. The Warehousing Corporations and the trade may therefore follow this Sangli method with advantage.

G. Transportation

In carrying turmeric from producers to consumers, various modes of transport are used. These are discussed below :

(1) ROADWAYS

(a) *Head loads*.—The practice of carrying turmeric as head loads is prevalent only in the State of Orissa. In this State, the system of communication is not well developed in the interior producing areas and most of the villages lie scattered about and are accessible only with difficulty. The most common method of transporting turmeric from the growing centres to the village hats is by head load or by means of 'bhars' (two baskets hung on a split bamboo pole and carried on shoulders). This method is adopted only for short distances. An adult labourer can carry about 1 to 1½ standard maunds of turmeric on 'bhars' and about a maund as head load. It is estimated that nearly 80 to 90% of arrivals in the primary markets are brought as head loads or on 'bhars'. In some areas around Parlekimedi small quantities are carried on pack animals also.

(b) *Bullock carts*.—Bullock carts are the most common means of transporting turmeric from the villages to the assembling markets in all the producing States.

Bullock carts are used for transport of turmeric to the assembling markets upto a distance of 20 to 30 miles. The capacity of carts vary but generally about 25 to 30 standard maunds are carried by a single bullock cart. When transported by bullock carts, turmeric is packed in gunny bags. In Orissa State, however, the produce is not packed in bags but is loosely heaped up in carts and transported. The cost of transport by bullock carts is normally governed by a number of factors such as condition of roads, demand for carts, season, distance covered and possibilities of securing loads on the return journey. Generally, for transporting upto a distance of 10 miles, the usual charges are 19 to 25 P. per standard maund and for longer distances like 20 to 30 miles, the charges vary from 37 to 50 P. per standard maund.

(c) *By lorries.*—During recent years, motor lorries have become a major mode of transport for agricultural commodities, but these are used mostly for moving the produce from assembling centres to various distributing and consuming centres.

Growers do not generally employ lorries for taking their produce to assembling markets. However, in many markets like Cuddapah, Nizamabad, Sangli and Erode which are well connected with villages by good motorable roads, some growers do engage lorries for transporting the produce. Whenever different agencies effect purchases of turmeric from villages as in Duggirala, the buyers invariably use lorries for transporting to the assembling centres. In Kerala where the producing areas are far removed from the assembling centres like Calicut, Alleppey and Cochin, turmeric is transported mostly by lorries from the producing areas within a distance of 50 to 60 miles.

For long distance transport, railways used to be the usual mode of transport. During recent years, however, goods are sent by lorries even to distant places. For Example, Nizamabad and Duggirala send turmeric by lorries even to distant places like Delhi and Bombay.

From important centres like Sangli, Tasgaon, and Takari in Maharashtra State, bulk of the turmeric moves towards Bombay and this entire movement of the produce is effected by using lorries. During 1960-61 it was found that as much as 50,000 standard maunds of turmeric amounting to nearly 25% of the total despatches from Duggirala were sent to Bombay by lorries.

From Cuddapah in Andhra Pradesh the entire despatches to markets like Erode, Madras and Tiruchirapalli in Madras State are sent by lorries only.

The exporters at Erode in Madras State carry turmeric by lorries to the port towns of Madras, Tuticorin and Nagapattinam from where turmeric is despatched to foreign countries.

In Orissa State, however, lorries are used only for transporting turmeric from Berhampur market for distribution within the State.

Capacity of lorries varies from 5 to 7 tons. But lorries of 5 ton capacity which can take 60 to 70 bags of about 2 maunds each are commonly used.

Unlike railway freight, charges for transport by lorry are not usually fixed on the basis of distance and weight. Flat rates per bag of turmeric from one centre to another are fixed according to local customs by some transport companies. These charges vary depending upon the availability of trucks in particular period and route. It is also not uncommon for lorry freight to be quoted on lorry load basis and between fixed centres. Lorry charges are usually inclusive of both loading and unloading charges. In most of the important towns, a special class of middlemen, known as lorry brokers, whose function is to arrange for lorries for the consignees, are functioning. They collect a small commission ranging from 2 to 3% from the lorry owners for their services.

Lorry freight between any two centres may vary considerably from time to time depending upon a number of factors such as competition amongst different lorry owners, season, availability of retn load, etc. For instance, transport charge for one lorry load of turmeric from Cuddapah to Madras has varied from Rs. 140 to as much as Rs. 240 even in the same season, during 1960-61. Some of the usual lorry charges between a few selected centres are given in the following table.

TABLE 43

Lorry charges between a few selected centres per maund of turmeric (1960-61)

From	To	Lorry freight per maund
		Rs. P.
Duggirala	Bombay.	3·31
Nizamabad	Delhi	4·00
Nizamabad	Bombay.	2·75
Cuddapah	Erode	1·60
Rajamundry	Kakinada	0·16
Sangli	Bombay.	1·20
Sangli	Ahmedabad	3·20
Karad	Sangli	0·45
Karad	Bombay.	2·00
Tasgaon	Bombay.	1·20
Berhampur	Cuttack	1·00
Erode	Madras	1·15
Erode	Bangalore	1·15
Karur	Trichur	1·20

Generally no loss is evident when turmeric is transported by lorries provided it is well packed in sound gunny bags. When the packing material used is defective, loss during transit may occur.

(2) BY RAILWAYS

In spite of competition from the road transport, the trade has to depend largely on the railways for inter-State trade in Turmeric.

All the important assembling centres are linked by rail with the major consuming and distributing centres and transport of turmeric by railways is extensively made use of by the merchants in these centres.

Regular statistics regarding the movement of turmeric by rail are not maintained. However, during the present survey, exhaustive enquiries were made from the trade and on the basis of the information collected, it is estimated that nearly 13 lakh maunds of turmeric, representing 58% of the total marketable surplus, were despatched by rail from various assembling markets in India. This clearly indicates the importance of the role played by railways in the movement of turmeric.

The railway rates structure has been thoroughly revised on the basis of the recommendations of the Freight Structure Enquiry Committee and the revised freight structure came into force from 1st October 1958.

According to this revised freight structure, first 500 kilometers are broken down into blocks of 5 kilometers each, the first block being 1 to 40 kilometers. From 501 kilometers to 2,000 kilometers the blocks are 10 kilometers each. Over 2,000 kilometers, each block consists of 50 kilometers. Freight charges are calculated for each block separately according to the class of goods.

For charging rail freight, goods are classified into two groups: (1) wagon loads, and (2) smalls. Turmeric has been placed for booking on wagon loads under the class 70/B and for smalls booking under class 77/5-B. The basic minimum weight for wagon loads of turmeric has been fixed at 300 standard maunds.

A surcharge of 10% of the freight is also levied on all small consignments, viz., a consignment weighing less than 10 maunds. In addition, a supplementary charge of 5 P. per rupee on the total freight is also levied.

Generally there is some loss during transit when turmeric is despatched by rail, especially over long distances. During the present survey, specific enquiries were made to assess the extent of loss in transit by rail. These enquiries show that the loss usually amounts to 1 to 2% of the total weight though in a few cases losses were reported to be as much as 5%.

(3) WATERWAYS

(a) *Country boats*.—It is only in the States of Andhra Pradesh and Kerala that country boats are used in the transport of turmeric. In Andhra Pradesh, turmeric is brought from the producing areas to the assembling market of Kothapetta in Godavari delta region by country boats. It is estimated that nearly 25% of the total arrivals in this market, amounting to 15,000 standard maunds of turmeric, was brought by country boats during 1960-61. The capacity of these boats varies widely from 5 tons to 40 tons. But country-made wooden boats carrying 300 to 600 bags of turmeric at a time provide the usual means of transport. For transporting turmeric from the producing areas situated at 20 to 25 miles from Kothapetta, the usual charges are 25 P. per bag of 140 lbs.

The entire arrivals of turmeric in Kothapetta market are sent mainly to Calcutta. From Kothapetta, turmeric is first transported by canal to Rajamundry at a distance of 25 miles, and from there it is despatched by rail to Calcutta. When wagon facilities are not readily available, the produce may be taken by canal to Kakinada port at a distance of 40 miles, and from there shipped to Calcutta by steamers. The cost of transport by canal works out to 25 P. per bag of 140 lbs from Kothapetta to Rajahmundry and 31 P. per bag of 140 lbs. from Rajahmundry to Kakinada.

Transport by canal in this area is suspended during the period from 1st May to 31st June every year since the canal is closed during this period.

During 1960-61, nearly 1 lakh maunds of turmeric was transported from Kothapetta to Rajahmundry and Kakinada by using country boats.

In Kerala State, about 25% of arrivals in the assembling markets of Cochin and Alleppey are brought by using country boats.

(b) *Steamers*.—Turmeric is sent by steamer from Madras and Kakinada ports to Calcutta. Very small quantities of turmeric are despatched from the port of Mangalore to Bombay. Except for this coastal trade, steamers are manily used for export of turmeric to foreign countries.

The freight charges for turmeric often fluctuate from month to month and usually differ between the west coast ports and the east coast ports. A uniform rate of freight is generally charged at all the east coast ports.

H. Adulteration

Next to salt and chillies, turmeric perhaps is most extensively used in food preparations in India. The fact that consumption of adulterated turmeric can seriously undermine the health of the people needs no emphasis. Adulteration is said to be prevalent not only in 'fingers' and 'bulbs' but also in the turmeric powder.

Enquiries made during the present survey have shown that previously merchants at assembling centres like Erode, Cuddapah, Nizamabad, etc., used to impart artificial colour to turmeric by using certain chemicals in order to cover up the blemishes of poor quality turmeric. Such colouration improves only its external appearance but not its intrinsic value as a condiment. In due course, this practice of colouring artificially became regular in preparing the produce for sale.

Adulteration in the case of turmeric fingers and bulbs appears to be practised mostly in the assembling markets. In the powder form, in which the scope for adulteration is much greater, instances of adulteration have been noticed right from the manufacturers' level upto that of the retailers.

The chemicals that are usually used by the trade are some form of lead chromate variously known as 'middle chrome', 'chemi chrome', etc. In some centres, dipping of turmeric fingers and bulbs in solutions of lead compounds like lead acetate is resorted to in the belief that such treatment of turmeric improves its hardness and

also its resistance to infestation. In the powder form, certain adulterants like wheat bran, rice bran, etc., after being artificially coloured, are added to the turmeric powder to increase its bulk.

The presence of lead is highly injurious even in small quantities. Analysis of commercial samples of turmeric in various public analytical laboratories indicated that some samples had high lead contents ranging from 20 to 200 parts per million. The high lead content in such adulterated turmeric is dangerous to health since it accumulates in the system and produces highly toxic symptoms and stomach upsets. It also results in changes in blood composition, weakness and even cause damage to the nervous system. Sometimes, it may even prove fatal.

Due to stringent and effective measures adopted by public health authorities in different States and the wide publicity given in the press regarding the harmfulness of consuming adulterated turmeric, the extent of adulteration that was very much rampant in the country, appears to be on the decrease. Besides, during the present survey it was noticed that the consumers all over have become conscious of the prevalence of adulteration in turmeric. Unless, however, authorities avail of the opportunity and introduce proper grading of turmeric under the Agmark Grading Scheme, and Export Quality Control measures thereunder, the consumers cannot be sure of the quality and purity of this article.

Under the Prevention of Food Adulteration Rules, standards of quality have been defined for turmeric as under :

“Turmeric (Haldi) means the dried rhizomes or bulbous roots of the plants of genus ‘*Curcuma*’ and the species ‘*longa*’ and includes turmeric in whatsoever form. It shall be free from damage by insect pests, from lead chromate and other artificial colouring matter and shall not contain more than 2·5 parts per million of lead. It shall conform to the following standards :

- (1) The characteristic Boric acid test shall be positive.
- (2) Total ash shall be not more than 7%.
- (3) Ash insoluble in Hcl shall not exceed 1·5%.”

According to this definition of standards of quality, only turmeric belonging to the species “*longa*” could be marketed as “turmeric”. During the present survey, however, it was noticed that a particular quality of turmeric known as “kasturi” produced in East and West Godavari areas of Andhra Pradesh and Tanjore areas of Madras State is also produced and marketed in fairly sizable quantities. This variety, is reported to belong to the botanical genus *Curcuma*, but to the species “*aromatica*”.

It may be considered whether the existing P.F.A. Rules require suitable amendments to include in its purview the kasturi type of turmeric also. Further, the existing P.F.A. Rules define turmeric as “the dried rhizomes or bulbous roots”. Although bulk of the turmeric is marketed in the dried form, sizable quantities are also marketed in the green and fresh form. The word “dried” therefore appears to be superfluous.

CHAPTER VI

MARKETING COSTS AND MARGINS

A. General

To study the costs and the margins of the intermediaries in the marketing of turmeric, typical examples of business transactions have been collected during the present survey from important assembling markets in Andhra Pradesh, Maharashtra, Orissa, Madras and Kerala and also from the distributing markets of Calcutta, Bombay and Madras. In all, 23 examples have been selected including also 4 examples of exports to foreign countries. These examples are given in Appendices XXX and XXXI and have been summarised in Appendices XXXII and XXXIII.

B. Marketing Costs

The total costs of marketing of turmeric may be broadly grouped under three main headings, *viz.*, (1) assembling charges which include expenses incurred in respect of transport from villages to assembling markets, market charges, grading, polishing and handling, cost of packing materials, carting to railway station, station expenses and taxes; (2) transport charges from assembling to distributing centres; and (3) costs of handling and other charges, taxes, etc., at the distributing centre.

(1) ASSEMBLING CHARGES

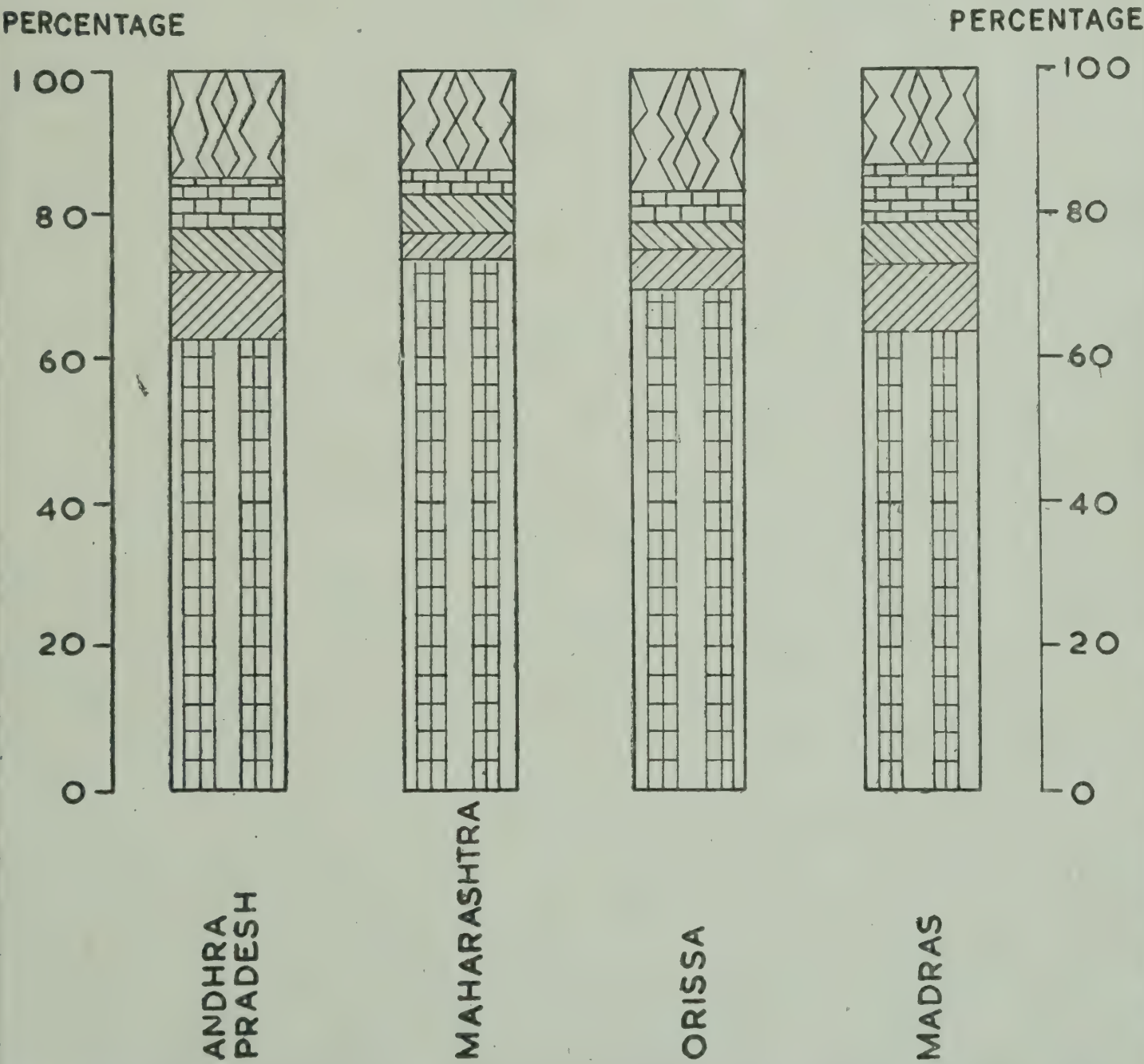
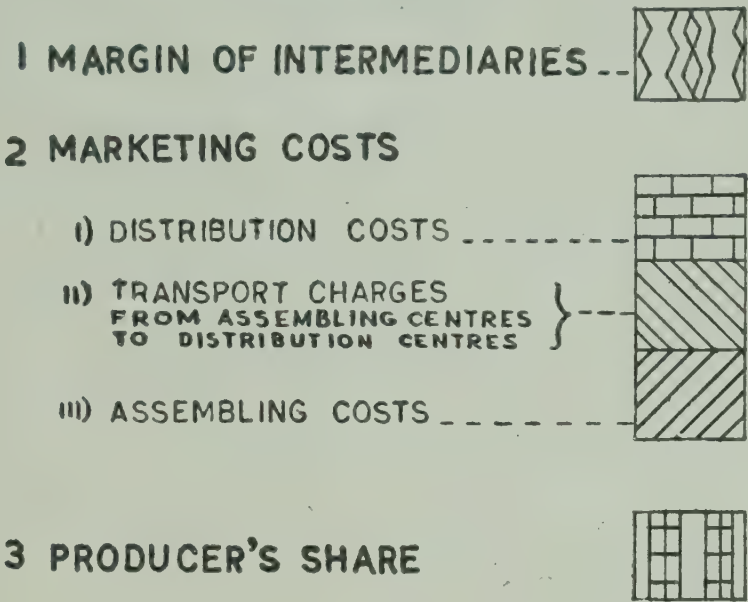
In the 19 examples of price-spread studied, the share of assembling charges in the consumer's price varied from 2·7% to 12·4%, with an average of 6·9%. Its share was the maximum in the State of Andhra Pradesh with an average of 9·3%, closely followed by Madras with 9%. In Orissa, the share was comparatively lower with 5·4%, while in Maharashtra State assembling costs were the lowest being 3·6% only. This fairly wide disparity in the assembling costs is largely explained by the differences in market charges prevailing in the assembling markets in these States. In Andhra Pradesh and Madras, most of the assembling markets for turmeric have not yet been regulated and as a result the market charges are fairly high as compared to the charges in the regulated markets of Maharashtra and Orissa States. Another factor responsible for the high assembling costs in Andhra Pradesh is the heavy purchase tax of 6% for turmeric as against a sales tax of 2% in Madras State. The economic advantages of including turmeric also in the schedule to the Regulated Markets Act of Madras and Andhra Pradesh are therefore obvious.

(2) TRANSPORT

The cost of transporting goods from the assembling markets to the consuming centres naturally will vary with the mode of transport used and the distances covered. The share of the transport charges in the consumer's price was the highest in Andhra Pradesh and amounted to 6·0% on an average. The share was about the same in Madras State with an average of 5·8%. From these two producing States, turmeric has to be moved to distant consuming

COSTS AND MARGINS IN THE MARKETING OF TURMERIC IN MAJOR PRODUCING STATES IN INDIA

REFERENCE



centres like Calcutta, Delhi and Amritsar and consequently transportation costs form a major share in the cost of marketing of turmeric in these two States. From Maharashtra also turmeric moves to distant consuming centres though not to the same extent as in the case of Andhra Pradesh and Madras. The share of transport costs in the consumer's price amounted to 5·6% in Maharashtra State. The movement of turmeric from Orissa State is only over comparatively shorter distances. Therefore, transport costs in this State accounted for only a smaller share of 3·8% in the consumer's price.

The examples studied reveal that short distance movement of turmeric is by road, whereas movements to distant consuming markets like Calcutta, Delhi and Amritsar are by rail. From Madras port, substantial quantities of turmeric are also despatched to the distribution centre of Calcutta by steamers.

(3) DISTRIBUTION COSTS

As in the case of assembling costs, distribution costs also are higher in the examples relating to Andhra Pradesh and Madras as compared to those relating to Orissa and Maharashtra States. The average share of distribution costs in the consumer's price in these four States varied from 8·3% in Madras, 7·2% in Andhra Pradesh, 4·1% in Orissa and 3·2% in Maharashtra. Turmeric from the States of Madras and Andhra Pradesh moves towards distributing markets like Calcutta, Delhi and Amritsar where the market charges, commission, brokerage, etc., are comparatively high. From Maharashtra State, the movement of turmeric is mostly towards Western Indian States where the distribution charges do not appear to be so high. However, the number of examples studied from this State is not sufficient to warrant generalisation. From Orissa also, the produce is usually distributed within the State and the remaining is despatched to Madhya Pradesh and Bihar where the distributing costs do not appear to be as high as in Calcutta or Amritsar.

(4) TOTAL MARKETING COSTS

The marketing costs were the highest in Madras State with an average of Rs. 12·12 P. per standard maund. This was closely followed by Andhra Pradesh with an average cost of Rs. 10·42 per standard maund. As explained in the previous paragraphs, all the three components of the marketing costs, namely, assembling charges, transportation charges and distribution costs were very high in these two States. The share of the total marketing costs in the consumer's price in the States of Madras and Andhra Pradesh amounted, on an average, to 23·1% and 22·5% respectively.

The marketing costs in the State of Maharashtra amounted on an average to Rs. 6·05 per standard maund and accounted for 12·4% of the consumer's price. Orissa State had the lowest marketing cost of Rs. 5·13 per standard maund. In this State, marketing costs represented 13·3% of the consumer's rupee. Although marketing costs in Orissa were low as compared to Maharashtra the share of marketing costs in the consumer's price was more in Orissa as compared to Maharashtra. This is explained by the lower prices that the Orissa produce fetches in the consuming markets as compared to the produce of Maharashtra.

In the export of turmeric, the three main elements of cost are assembling, F.O.B. expenses and steamer freight.

Assembling costs.—Both in Madras and Kerala States the assembling costs are fairly high and amounted to Rs. 4·33 and Rs. 6·00 per standard maund respectively. This item of costs accounted for 11·4% and 8·4% respectively of the C.I.F. destination price.

F.O.B. expenses.—The F.O.B. expenses were not very significant and amounted to only 0·58 P. in Madras State and 0·74 P. in Kerala State per standard maund of the produce. In these two States this cost item represented 1·5% and 1·0% respectively of the C.I.F. destination price.

Steamer freight.—This is the most important element of cost in the exports of turmeric and varies considerably according to the distances involved. For instance, the freight charges from Madras amounted to only Rs. 1·68 per standard maund as against Rs. 14·36 per standard maund in the exports from Kerala State. The share of this item in the C.I.F. destination price in these two States amounted to 4·4% and 20·2% respectively.

In addition to these expenses the exporters from Kerala had to incur additional expenses at the destination by way of brokerage, weighment charges, etc., which amounted to Rs. 1·52 per standard maund or 2·2% of the destination prices.

C. Producer's Share

It can be seen from Appendix XXXII, that the turmeric producer's share in the consumer's price amounted to 62·8% in Andhra Pradesh, 63·6% in Madras, 69·6% in Orissa and 73·8% in Maharashtra. The share of the producer was higher in Maharashtra and Orissa while it was comparatively low in Andhra Pradesh and Madras. The slightly lower return in Andhra Pradesh is due to three factors, namely, the high assembling costs, longer distances through which the produce has to be carried for marketing and the heavy distributing costs at centres like Calcutta, Delhi and Amritsar. Of the 9 examples studied from this State, 2 examples related to unpolished fingers, and the producer's share in these amounted to 62·1% and 57·7% of the consumer's price. In the 6 examples where turmeric was marketed after polishing, the producer's share was slightly more ranging from 62·8% to 67·7%, the only exception being example 4 where the producer's share was only 59%. This was, however, due to the very heavy transport charges and the larger retailer's margin in Amritsar.

The producer's share was slightly more in Madras State and varied from 62·0% to 69·7%. The share was lowest in respect of example 12 and amounted to only 56·7%. This was again due to the high distributing costs and also the longer distance over which the produce had to be carried. All the five examples in this State relate to transactions in the form of polished fingers.

Growers in Orissa received a greater share of the consumer's price. In the three examples studied, the percentage share varied from 66·3% to 76·0%. The low assembling costs in this State, coupled

with the short distances involved in marketing are mainly responsible for these higher returns to the producers. All transactions were in the form of unpolished fingers.

The producers in Maharashtra State appear to get the highest share of 69·7% and 78·3% in the consumer's rupee. In this State also, the assembling costs are comparatively low and the produce is carried over short distances only. The number of examples studied in this State is, however, too small to form definite conclusions in this regard.

Appendix XXXIII, which summarises the examples of price-spread in the exports of turmeric given in Appendix XXXI, indicates that the growers in Madras State had as high a share as 77·2% and 81·7% in the C.I.F. destination prices. The producer's share in Kerala was lower and amounted to only 66·5% and 64·6%. This is mainly due to the fact that in Kerala State, the steamer freight paid was considerably higher and accounted for as much as 19·6% and 20·7% of the destination price as compared to 5·2% and 3·6% in respect of the exports from Madras State.

D. Margins of Intermediaries

The three important agencies engaged in the marketing of turmeric are: (a) the merchants at the assembling centres, (b) the wholesale merchants at the distributing markets, and (c) the retailers in the consuming markets. The margins of these intermediaries as found during the survey are discussed below:

(1) MERCHANTS AT ASSEMBLING MARKETS

In the 19 price-spread examples studied, the share of the merchants at assembling markets in the consumer's rupee varied from 0·8% to 5·7%, the average being 2·3%. In terms of value, the margin varied from 39 P. to Rs. 2·23 per standard maund, the average being Rs. 1·08.

The average margin of the merchants at assembling markets was the highest in Orissa State and amounted to Rs. 1·38 per standard maund or 3·6% of the consumer's rupee. In respect of Madras and Andhra Pradesh the margins were more or less the same and amounted to 2·3% and 2·2% respectively of the consumer's price. The lowest margin of 76 P. per standard maund or 1·5% of the consumer's rupee was noticed in the case of Maharashtra State.

(2) WHOLESALE MERCHANTS AT DISTRIBUTING MARKETS

The margins of the wholesale merchants at distributing markets varied within narrow limits only, the average being Rs. 1·69 per standard maund or 3·6% of the consumer's rupee. Among the individual States, the average margins amounted to 4·3% in Maharashtra, 3·7% in Orissa, 3·3% in Andhra Pradesh, and 3·1% in Madras. This similarity of the margins of the wholesale merchants in respect of all the examples clearly indicates the more or less organised and established nature of turmeric trade in these different distributing markets.

(3) RETAILERS AT CONSUMING MARKETS

Unlike the margins of these wholesale merchants in the distributing markets, the retailers' margins showed some variation. The share of the retailer in the consumer's price varied from 6.1% to 10.8%, with an average of 8.7%. The margin of the retailer in Kanpur, Hyderabad and Raipur represented 10.2%, 10.6% and 10.8% respectively of the consumer's price. The retailers at Calcutta, Amritsar and Madras had a margin of 7.8% to 9.8%. Although the margin of the retailers tends to vary from centre to centre, they usually prefer to keep their prices constant and small changes in the wholesale prices are not usually allowed to influence the retail prices.

Of the three intermediaries participating in the marketing of turmeric, the margin of the wholesale merchants in assembling markets was the lowest and amounted to 2.3% of the consumer's price. The wholesale merchants in the distributing markets had a higher margin of 3.6% in the consumer's price. The highest margin of 8.7% in the consumer's rupee was, however, received by the retailers in the consuming centres.

(4) TOTAL MARGINS

The highest total margin of the intermediaries was noticed in Orissa where it amounted to Rs. 6.58 per standard maund or 17.1% in the consumer's rupee. The total margin of the intermediaries in the other three States were more or less the same and amounted to Rs. 6.88 per standard maund in the case of Andhra Pradesh, Rs. 6.80 per standard maund in Maharashtra and Rs. 7.00 in Madras. The total margins of the intermediaries in respect of these three States represented a share of 14.7%, 13.8% and 13.3% respectively in the consumer's price.

In the exports of turmeric, the average margin of the exporters in Madras State amounted to Rs. 1.23 per standard maund representing 3.3% of the C.I.F. destination price. The exporters' average margin in Kerala State also was about the same and amounted to Rs. 1.99 per standard maund or 2.8% of the price at destination.

E. Comparison of Costs and Margins by States

Based on the present survey of the costs and margins in the marketing of turmeric, the average net return to the producers in the States of Andhra Pradesh, Maharashtra, Madras and Orissa has been worked out. These are summarised in Appendix XXXIV and are also discussed below.

Andhra Pradesh : Out of the average price of Rs. 46.30 per standard maund, the producers in Andhra Pradesh got a net return of Rs. 29.06 representing 62.8% of the consumer's price. Out of the balance, as much as Rs. 10.42 or 22.5% was taken up by various marketing costs and the remaining Rs. 6.82 or 14.7% was absorbed as margins of the intermediaries.

Among the marketing costs, assembling charges accounted for 9.3% of the consumer's rupee, transport costs 6.0% and distribution costs 7.2%. Nearly one-fourth of the price paid by the consumer was thus taken up by assembling charges.

Of the intermediaries, the retailers shared a margin of 9.2% in the consumer's rupee, the merchants at assembling centres 2.2% and the wholesalers at distributing centres 3.3%.

Madras: In this State also, nearly 23.1% of the average consumer's price of Rs. 52.55 per standard maund of turmeric, was taken up by marketing costs. This included 9.0% towards assembling costs, 5.8% towards transportation costs and the remaining 8.3% towards distribution costs.

The various intermediaries absorbed 13.3% of the consumer's price as their total margins. The average net return to the producers in this State amounted to Rs. 33.43 per standard maund or 63.6% of the consumer's price.

Maharashtra: The growers in Maharashtra secured an average net return of Rs. 36.15 per standard maund representing a share of 73.8% in the consumer's rupee. This was the highest share among the four major producing States.

Marketing costs were much lower in this State and amounted to only Rs. 6.05 or 12.4% of the consumer's price. This was made up of a share of 3.6% towards assembling costs, 5.6% towards transport costs and 3.2% towards distribution costs.

In this State also, the total margins of the intermediaries amounted to Rs. 6.80 per standard maund or 13.8% of the consumer's price, the retailers taking up the greater share.

Orissa: Next to Maharashtra, the growers in Orissa State had the maximum net return. It amounted to Rs. 26.76 per standard maund representing 69.6% of the consumer's price of Rs. 38.47. As in the case of Maharashtra, the assembling charges were comparatively low in this State and amounted to only Rs. 5.13 or 13.3% as against Rs. 10.42 in Andhra Pradesh and Rs. 12.12 in Madras.

The total margins of the intermediaries were the highest in this State amounting to Rs. 6.58 or 17.1% of the price paid by the consumers. The merchants at the assembling centres got a margin of 3.6% in the consumer's rupee. The share of the wholesale merchants in the distributing centres was also similar, being 3.7%. As in the other States, the retailer's margin was the maximum and amounted to 9.8% of the consumer's rupee.

Considering all the examples together, the turmeric producers in India got on an average a net return of Rs. 31.35 per standard maund representing 67.3% of the price paid by the consumers. The various marketing costs amounted to Rs. 8.43 or 18.1% of the consumer's price. Of these, assembling costs accounted for 6.9%, transport costs 5.4% and distribution costs 5.8%.

The intermediaries accounted for a total margin of Rs. 6.80 per standard maund or 14.6% of the consumer's price. This was made up of Rs. 1.08 or 2.3% by the merchants at assembling centres,

Rs. 1·69 or 3·6% by the wholesale merchants at the distributing centres, and the largest share of Rs. 4·03 or 8·7% by the retail merchants in the consuming centres.

The above discussions clearly admit of the following general observations :

- (1) During the period of the present marketing survey, the growers of turmeric in all the major producing States appeared to be getting a fairly good share of the price paid by the consumers of this commodity.
- (2) The assembling charges are relatively high in the States of Andhra Pradesh and Madras. This is mainly due to the unregulated market charges prevailing in many centres in these two States.
- (3) As already pointed out, unlike other commercial crops, turmeric leaves the farmer only after being cured and dried, the only other processing done by the merchants being polishing. There is, therefore, not much scope for increasing the producer's net return by encouraging them to undertake any further processing.
- (4) Transport costs form a significant part in the marketing costs. This is unavoidable in a commodity like turmeric. Its production is localised in specific areas while its distribution is spread all over the country. It is for consideration if special reduced point-to-point railway freight rates between selected producing centres and major distributing centres could be introduced.
- (5) The distribution costs at some centres like Bombay, Calcutta and Delhi appear to be rather high. The co-operative organisations in various producing centres should therefore try to set up their own depots, branches or agencies in these important distributing markets and arrange to sell the produce through these agencies.
- (6) The margins of the retailers and the mode of retail distribution appear to be followed on as uniform pattern in almost all the consuming markets.

SUMMARY AND CONCLUSIONS

(1) Indian Supplies

Turmeric belongs to the order of plants *Scitaminae*, family *Zingiberaceae* and genus *Curcuma*. Under this genus, nearly thirty species have been recognised by scientists but *Curcuma longa* Linn is economically the most important and is widely cultivated in India. The crop is propagated vegetatively and takes usually 8 to 9 months to mature. The harvested rhizomes of the plant, after proper curing and processing, form the article of commerce. Another species, *Curcuma aromatica* is also grown for commercial purposes.

In Hindi, this commercial produce is known as "haldi". Its local name in Oriya is "haldi", in Telugu "pasupu", and in Malayalam and Tamil "manjal".

In India, turmeric is grown as one of the important cash crops. It accounts for nearly 6 per cent of the total area under spices and condiments. The chief growing areas of this crop are distributed in the States of Andhra Pradesh, Maharashtra, Orissa, Madras and Kerala.

All-India crop forecasts for turmeric are not published by the authorities. Detailed enquiries were therefore made in each of the growing areas and estimates of area and yield for the years 1959-60 and 1960-61 were made during the present survey. The total area under turmeric crop was of the order of 97,600 acres in 1958-59 and 97,300 acres in 1960-61. Andhra Pradesh stood first with a total area of 27,800 acres in 1958-59 and 30,300 acres in 1960-61. Maharashtra and Orissa came second and third respectively.

The average annual sown area under turmeric in India is estimated at 1.06 lakh acres. The growing regions are mainly concentrated in the five States of Andhra Pradesh, Maharashtra, Orissa, Madras and Kerala. These five States put together account for nearly 90.8% of the total acreage under turmeric in India. Generally speaking, the crop is cultivated in small holdings of 0.5 to 1.0 acre. Even in these five major producing States, cultivation of turmeric is concentrated in specific areas only.

The average yield of turmeric per acre, in terms of cured and processed turmeric, varies from State to State depending upon soil and climate conditions, agronomical practices followed, etc. The average yield of cured turmeric in different States varied from 2,736 lbs. to 3,138 lbs. in the case of irrigated crop and from 884 lbs. to 1,547 lbs. in the case of rainfed crop. The all-India average yield is reckoned at 2,376 lbs. per acre. It may be stated that no systematic attempt has been made even in the major producing States to determine the correct outturn of the crop in different regions or its standard yield based on crop cutting experiments.

The total quantity of turmeric produced in India has been estimated at 26.53 lakh maunds during 1958-59 and 28.35 lakh maunds during 1960-61. The production consists chiefly of *Curcuma longa* amounting to 95.1% and the balance of 4.9% is made up of *Curcuma aromatica*. By far the largest quantities of turmeric are produced in the two States of Andhra Pradesh and Maharashtra which together accounted for 18.3 lakh maunds or 64.4% of the total production during 1960-61. Orissa and Madras came next in importance with a total production of 7.24 lakh maunds representing 25.5% of the total crop.

Turmeric produced in different areas is known by various local trade names based mainly on the regions of production. There are as many as 16 such regional qualities known in the trade. The 'Rajapuri' of Maharashtra and 'Duggirala' of Andhra Pradesh are, however, the two qualities which are commercially most important. These two qualities accounted for 20.6% and 15.4% respectively of the total Indian production during 1960-61.

The commercial qualities produced in the different regions consist, of two types, viz., "bulbs" and "fingers". During 1960-61, it has been estimated that out of a total production of 28.35 lakh maunds, 21.62 lakh maunds or 76.2 per cent consisted of "fingers", while 6.73 lakh maunds or 23.8% consisted of "bulbs". The bulbs and fingers produced in different regions are also sometimes "polished" and both the polished and unpolished qualities are marketed depending upon the demand. The proportion of polished and unpolished qualities sold in the markets vary from year to year but it has been estimated that during 1960-61, 13.21 lakh maunds or 46.6% of the annual production were processed and converted into the polished form and the remaining 9.85 lakh maunds or 34.7% were marketed in the unpolished form.

Based on the information collected during the present survey, it has been estimated that annually, on an average, 17.7% of the total production in India is retained by the growers for use as seed, 12.6% in the form of bulbs and 5.1% in the form of fingers. The average quantity annually retained for domestic consumption is small and has been found to work out to 0.7 per cent of the total production of this crop. This quality may be retained both in the fresh and in the cured form.

The peak period of marketing in different areas varies with the time of harvest. Generally speaking, the peak period for the marketing of turmeric in most of the producing areas in India commences from February and lasts till May.

The marketable surplus of turmeric in India amounted to 2,523.9 thousand maunds during the quinquennium ending 1960-61.

Out of a total turmeric production of 2,835.4 thousand maunds during 1960-61, 549.6 thousand maunds were retained in the villages for different purposes and the balance amounting to 2,285.8 thousand maunds consisting of 300.6 thousand maunds of bulbs and 1,985.2 thousand maunds of fingers has been estimated as marketable surplus.

India is surplus in regard to the production of turmeric. This article is not, therefore, imported from any foreign country.

India has been an exporter of turmeric for the past several years. The produce is exported to as many as 64 countries. The main ports of shipment are Bombay and Madras.

Until 1958-59, India's export of turmeric maintained a level above 1 lakh cwts. touching an all time peak level of 2.32 lakh cwts., valued at Rs. 1.1 crores during 1956-57. The exports started declining after 1956-57 and touched the lowest level of 0.5 lakh cwts. valued at Rs. 25 lakhs during 1960-61. This is mainly due to the reduced off-take of turmeric by Pakistan, the principal importer. The exports of turmeric from India continue in small quantities throughout the year but are slightly higher during the months of March, April and May.

The principal importers are Pakistan, Middle East countries, U. K. and U.S.A. While during the pre-Plan and First Plan periods Pakistan was the chief importer, Iran became the chief customer of Indian turmeric during the Second Plan period.

Broadly speaking, the quality of turmeric exported consists of trade varieties such as Cuddapah, Salem, Erode, Karur and Alleppey fingers. There appears to be specific preferences for one or the other of these commercial qualities in the various importing countries and therefore these export qualities vary depending upon their destination. For instance, U.S.A. buys almost exclusively unpolished "Alleppey fingers", while U.K. and other continental countries seem to have preference for unpolished fingers of superior quality.

After deducting the exports of 61.9 thousand maunds and the village retention for seed of 529.7 thousand maunds from the total supplies of 2,835.4 thousand maunds, the net supplies available for internal consumption during 1960-61 amounted to 2,243.8 thousand maunds. These were available in the form of 288.5 thousand maunds of bulbs and 1,955.3 thousand maunds of fingers.

(2) Utilisation and Demand

Bulk of the available supplies of turmeric is utilised as a condiment within the country. During the quinquennium ending 1960-61 as much as 2,050.0 thousand maunds or 66.3% of the total supplies of 3,093.3 thousand maunds were estimated to have been utilised as condiments. Nearly one-fifth of the total supplies is generally utilised for seed purposes and a small proportion for export purposes. Only smaller quantities of turmeric are utilised for toilet purposes. The practice of anointing the body with turmeric paste is an age-old custom with Indian women and is still prevalent. The quantities utilised for toilet purposes during the quinquennium ending 1960-61 and during 1960-61 were estimated at 188.5 thousand maunds and 179.5 thousand maunds accounting for 6.1% and 6.3% of the respective total supplies.

The quantities of turmeric utilised as a source of vegetable dye and for medicinal and religious purposes are small. With the coming

into use of cheap aniline dyes in place of old vegetable dyes during the last decade, the use of turmeric as a source of dye has become very much limited.

Carry-over stocks being negligible, the average annual demand for turmeric in India has been estimated at 30.9 lakh maunds during the quinquennium ending 1960-61. As against this, the demand during 1960-61 amounted to 28.4 lakh maunds showing a decrease of 8.1% in the total demand. The demand for polished turmeric was of the order of 1,320.6 thousand maunds and for the unpolished produce 985.1 thousand maunds during 1960-61.

Among the various commercial qualities of turmeric produced in the country, Rajapuri produced in Maharashtra State was in maximum demand during 1960-61 and accounted for 468.4 thousand maunds or 20.5% of the total. The entire demand for this quality was in the form of polished fingers and the demand was mainly from the Western Indian States.

The total requirements of Duggirala quality produced in Andhra Pradesh was estimated at 350.3 thousand maunds including 103.5 thousand maunds in the unpolished form and 246.8 thousand maunds in the polished form. Erode, Salem and Karur qualities of turmeric produced in Madras State were in demand to the extent of 176.3 thousand maunds, 46.5 thousand maunds and 24.0 thousand maunds respectively. These qualities consisted mostly of polished fingers.

Alleppey finger turmeric produced in Kerala is mainly used to meet the export demand from U.S.A. and to a smaller extent from Aden. The total demand for this quality amounted to 24.6 thousand maunds.

Although the production of turmeric is mostly concentrated in a few States, the demand for it is universal in India.

With the replacement of dyes of vegetable origin by cheap synthetic dyes, the demand for turmeric from foreign countries as a colouring material has practically died and the present demand is mainly for use as a food preservative and as a condiment.

The entire quantity of turmeric entering the inter-State trade was contributed by the five major producing States of Andhra Pradesh (705.6 thousand maunds), Maharashtra (412.5 thousand maunds), Madras (113.6 thousand maunds), Orissa (91.5 thousand maunds) and Kerala (5.7 thousand maunds). The total quantity of turmeric that entered the inter-State trade was estimated to be of the order of 1,328.9 thousand maunds.

Based on the data regarding net supplies available for consumption estimated during the survey, and on the population figures of 1961 census, the all-India per capita consumption of turmeric and the corresponding figures in the five major producing States have been estimated.

The all-India per capita consumption of turmeric works out to 0.42 lbs. Among the producing States, the per capita consumption was highest in Orissa and was found to be of the order of 0.98 lbs.

This is mainly due to the widespread use of turmeric in this State for toilet purposes among the women folk, particularly of the rural areas. The per capita consumption in the other major producing States of Maharashtra, Madras and Andhra Pradesh has been found to be 0.59 lbs., 0.50 lbs. and 0.49 lbs. respectively. Per capita consumption in Kerala amounted to only 0.39 lbs. and in other Indian States it was smaller and amounted to 0.35 lbs.

(3) Prices

During the last decade, the prices of turmeric have been fluctuating violently in the country. Taking 1951-52 prices as the base, turmeric prices in 1952-53 showed a decline. Thereafter, the prices continued to show an upward trend till 1956-57 touching the peak level during 1954-55. Owing to substantial increase in production and a decreased demand from the importing countries, the prices of turmeric started declining from 1956-57. This downward trend continued during the next two years and reached the lowest level during 1957-58, the fall in price levels over the base period ranging from 17.3% to 42.4% in different markets. The position, however, improved during 1958-59 and the prices once again started rising, the upward trend continuing up to 1960-61. The trend of turmeric prices in foreign markets was found to be in keeping with the trend in the internal markets.

Among the several commercial qualities, Erode and Rajapuri qualities fetched maximum prices, the average annual wholesale price obtained being Rs. 28.41 and Rs. 28.04 per standard maund respectively during 1956-57 to 1960-61. Cuddapah and Duggirala qualities fetched more or less the same price during the same period, their respective prices being Rs. 22.75 and Rs. 23.61. Alleppey finger quality fetched Rs. 26.13. The Nizamabad quality fetched the lowest price of Rs. 18.66. This was mainly due to the fact that the produce usually contains as much as 20 to 25% of moisture and arrives in Nizamabad market without being properly dried.

Price relationship between different commercial qualities at Sangli, Bombay and Calcutta was studied. At Sangli, the price of Rajapuri quality was slightly more as compared to Cuddapah and Duggirala qualities throughout the year except during January and March 1961 when Duggirala and Cuddapah qualities fetched higher prices. The position in the Bombay market was different in that Duggirala quality fetched higher prices than Rajapuri and Cuddapah qualities during 1960-61 except in May and June 1960 when Rajapuri quality obtained a higher price. The prices of Cuddapah quality were the lowest among those of the three commercial qualities throughout the year, though differences between the prices of these qualities in this market were insignificant unlike at Sangli market. In Calcutta market, the Erode quality was sold at a premium over the Madras quality throughout the year 1960-61.

Generally speaking, finger turmeric normally fetched a premium of Rs. 3 to Rs. 7 per standard maund over bulb turmeric in all the markets.

As in the case of other agricultural commodities, the prices of turmeric also are subject to considerable seasonal variations. In the

assembling markets, the prices usually rule low during March to June. This synchronises with the harvesting seasons of the crop and the fall in prices is due to large arrivals during this period. At export centres, the prices are generally high during the months when bulk of the exports takes place, *viz.*, February to March. In the distributing markets, the prices rule high during the festival months of October to December. These seasonal fluctuations in prices can be minimised if the marketing co-operatives as well as the State and Central warehousing corporations try to regulate the flow of supplies to these markets by providing adequate facilities of storage and finance to the growers.

Comparison of wholesale and retail prices in Cuddapah and Hyderabad markets showed that the retail prices generally moved in sympathy with the wholesale prices though not in the same proportion.

The Spices and Oil Seeds Exchange Limited, Sangli, is the only association in the country that has been recognised at present for futures trading in turmeric. The Exchange at Sangli has adopted "Rajapuri" quality as the basis variety and prices are quoted per quintal of this quality. Among the many qualities of turmeric grown in the country, Cuddapah, Duggirala, Nandyal, Kodur, Nizamabad, Erode and Salem are tenderable against the basis quality. The tenderable differences payable against the basis quality are fixed for different seasons by the special committee appointed by the Board of the Exchange. All the tenderable varieties except the Salem quality were at a discount varying from 12½% in the case of Cuddapah quality to 3% in the case of Erode quality.

For trading in futures, the Vikram Samvat calendar is being followed. There are three hedge contracts in a year, *viz.*, Margashirsh, Vaishakh and Ashwin.

Generally speaking, the spot and futures prices of turmeric moved in sympathy with each other. This is clearly illustrated by the average monthly futures and spot prices at Sangli for the period from October 1957 to September 1961. The "spread", *i.e.*, the difference between the spot and futures prices, the factor which is more significant to "hedger" than the movement of the spot and futures prices during the above period, has not shown very irregular variations, the average spread between spot and futures prices during the above period ranging from Rs. 1·30 to Rs. 2·30 per standard maund.

The turmeric prices ruling in important distributing markets like Bombay and Calcutta seem to have profound influence in determining the prices of this commodity in the assembling centres. The conditions prevailing in the futures market also have some influence on the spot prices.

(4) Preparation for the Market

Turmeric, as harvested from the field, is in the raw green form. For use as sowing material, it is preserved in this form. Bulk of the crop, however, is marketed only after proper curing and processing.

After harvesting, the rhizomes are cleaned of earth adhering to them in the field itself. Sometimes cleaning is carried out in the yards near the farms. The 'fingers' and 'bulbs' are separated from the rhizomes and shrivelled and devitalised rhizomes are also removed. At this stage, seeds for the next year are also selected.

After cleaning, the turmeric is ready for boiling. For facilitating uniform boiling the bulbs and fingers are boiled separately. The cooked rhizomes are dried in the sun. It is believed that the stage at which boiling is stopped largely influences the colour and aroma of the final product and only skilled men are, therefore, employed for supervising the boiling of turmeric. The receptacles used for boiling in different areas are of varying sizes and shapes and may be made of earth, iron, tin or zinc.

The process of drying the cooked turmeric is very simple and consists in spreading out boiled produce on the drying floor exposed to the sun. The drying floors are sometimes smeared with cow-dung. Turmeric is spread out in a layer of about 2" thickness as a thinner layer may affect the colour of the dried produce. It takes generally about 10 to 15 days for the rhizomes to get thoroughly dried. The growers in Orissa and in Nizamabad areas of Andhra Pradesh generally do not dry turmeric completely and bulk of the produce found in the assembling markets in these areas is only partially dried and contains sometimes as much as 25 to 30% of moisture.

Growers generally do not undertake any sorting of the dried turmeric before it is taken for sale.

The boiled and dried turmeric has a rough and hard outer surface and a few scales and root bases may also be sticking on to it. In order to smoothen its external surface and also to slightly improve its colour, dried turmeric is subjected to a processing known as "polishing".

Polishing of turmeric is done both manually and by using machinery. The simplest method of polishing consists in rubbing the product on a hard surface or in trampling it under feet wrapped in gunny bags. In this method, only the outer layer of turmeric gets smoothened without any improvement in its outer colour. The turmeric so polished is, however, marketed as "unpolished turmeric".

In most of the assembling centres for turmeric in the country, turmeric is polished in drums driven by mechanical power and polishing by this method is known in the trade as "machine polishing" and the turmeric so polished as "machine polished". The polishing units are generally owned by private parties and the turmeric merchants get the produce polished on payment. In centres like Nizamabad, Karur, Salem, etc., where large quantities of turmeric are not stored in pits, these polishing units work for a period of about 2 to 3 months in a year. In big assembling centres like Duggirala, Erode, Sangli, etc., where large quantities of turmeric are stored in pits, polishing is continued throughout the year.

Turmeric is made more attractive by resorting to colouring. For imparting colour, only half polished turmeric is used since the colour does not stick to rhizomes that have been polished fully to a smooth finish. The colouring may be imparted either by a "dry process" or by a "wet process". In the dry process turmeric powder or a yellow dye stuff ("middle chrome or chemichrome") is added to the turmeric in the polishing drums after it is partially polished and the drum is rotated for a period of about 10 minutes when the rhizomes attain an attractive yellow colour. In the wet process turmeric powder or the chemicals mentioned above are suspended in water and sprinkled over the rhizomes and rubbed well with hand as in Andhra Pradesh or shaken in baskets as in Madras State to evenly colour the rhizomes. It is then well dried for a week. Wet colouring is believed to give a brighter appearance to rhizomes.

In Erode centre in Madras State, a paste made of alum, castor seed, turmeric powder and sometimes "chemichrome" is used for colouring the turmeric.

Addition of such foreign substances for imparting colour to turmeric is not, however, considered desirable.

Although turmeric is marketed in the country at present under sixteen commercial qualities, these qualities are at best indicative of their respective areas of production and are not based on any rational standards of quality. As such, the present method of commercial classification and grading of turmeric followed by the trade needs to be replaced by a more scientific system of classification based on common quality characteristics such as size, core colour, hardness, etc.

With a view to drawing up standard grades and grade specifications for turmeric under "Agmark", 130 commercial samples of turmeric fingers, bulbs (both polished and unpolished) and powder were collected from important assembling and consuming markets from most of the States in India. These samples were analysed for various quality factors such as moisture content, total ash, ash insoluble in HCl, crude fibre content, curcumin dye content, length and thickness, natural test weight, presence or absence of lead chromate and coaltar dyes. Based on these analytical data, it has been found possible to broadly classify commercial turmeric into "bulbs" and "fingers". These again may be either 'polished' or 'unpolished'. For each of these forms of turmeric, six grades have been prescribed, making in all 24 grades, based mainly on size and core colour. The entire production of turmeric in the country can be graded under any one or the other of these grades.

For turmeric powder, two grades have been prescribed on the basis of colour.

Gunny bags are the only type of container used for packing turmeric in its various stages of marketing. Usual size of the gunny bags is 44" × 26½" and the quantity of turmeric filled in each bag varies according as whether it is bulbs or fingers and also according to its quality. In different assembling centres, the quantity of

turmeric filled in bags was found to vary from 70 kgs. to 90 kgs. It is suggested that 75 kgs. may be adopted as the standard weight of packing.

(5) Methods of Marketing

Turmeric crop is assembled by growers, village merchants, itinerant merchants and agents of exporters. Out of the estimated total marketable surplus of 21.36 lakh maunds of turmeric available during 1960-61, 12.06 lakh maunds or 56.0% were taken by the growers themselves to various assembling markets for sale and the remaining 9.3 lakh maunds or 44.0% were disposed of by the producers in the village itself to the other agencies.

The sale of turmeric by the growers in the village is very much in vogue in the States of Orissa, Andhra Pradesh and Kerala. As much as 90% of the marketable surplus available in Orissa State is sold by the growers in villages. In Andhra Pradesh and Kerala 65% and 60% respectively of the marketable surplus is sold in the villages. In some producing areas like Kothapettah and Duggirala, the entire quantity of turmeric available for marketing is disposed of by the growers in the villages.

In village sales, services of brokers are usually sought after by buyers only in Andhra Pradesh. In other States buyers generally effect purchases directly from the growers without the help of any intermediaries. The prices are fixed by direct negotiation, after visual examination of the produce and payment is generally made immediately after the weighment of the produce. In village sales, growers do not incur any expenditure for marketing their produce but the buyers, however, have to meet the charges for weighment and handling of the produce ranging from 12 P. to 56 P. per standard maund and also brokerage, when payable, at 25 P. to 56 P. per standard maund.

Arrivals of turmeric in the various assembling centres are mainly purchased by merchants at assembling centres, merchants from distributing markets, forwarding agents and exporters. Of these merchants at assembling centres are the most important agencies purchasing nearly 66% of the arrivals in the assembling markets, the share of the other three agencies, namely, forwarding agents, exporters and merchants from distributing markets being 27%, 5% and 2% respectively.

There are, in India, about 21 markets important for assembling turmeric and nearly 70% of the total marketable surplus of this commodity is handled in these markets. These are located mainly in the five major producing States of Andhra Pradesh, Maharashtra, Orissa, Madras and Kerala. Some of these markets are regulated while others have not yet been brought under regulation.

All the important assembling markets for turmeric in Maharashtra, namely, Sangli, Takari, Karad and Tasgaon are regulated under the Bombay Agricultural Produce Markets Act, 1939. The market committees functioning in these centres are found to be effectively enforcing the provisions under the Market Regulatory Act.

Commission agents are the most important link between sellers and buyers and as a rule are found to operate in all the assembling markets, both regulated and non-regulated. Their number however varies in various assembling markets. In Sangli, the biggest assembling market for turmeric, there are over 170 commission agents. In markets like Erode, Cuddapah and Karur the number varies from 30 to 40 and in small markets like Takari in Maharashtra, Tikkabali in Orissa and Alleppey in Kerala, there are only 10 to 15 commission agents. Their main function is to arrange for the sale of the produce brought to them by the growers by contacting the intending purchasers, negotiating the prices on behalf of the sellers and settling the deal. They also advance loans on interest to growers towards their cultivation expenses and other financial needs. In addition to these functions, sometimes they also make purchases on their own account.

Co-operative societies in assembling centres, wherever they exist, also act in the same manner as commission agents do but with the primary objective of according fair deal to the producer-members in the disposal of the produce in the markets. Among the five major producing States, it is only in the States of Maharashtra, Madras and Orissa that co-operative marketing societies have been formed and are handling turmeric while they are almost absent at present in Andhra Pradesh and Kerala. The volume of the produce handled by the co-operative marketing societies is very insignificant.

Brokers are not functioning in all the assembling markets. They are found to operate only in markets like Cuddapah, Karur, Calicut and Cochin.

Open auction and open agreement are the two important systems of sale followed in respect of turmeric in most of the assembling markets in India. Sale by open auction is followed in the markets of Andhra Pradesh and Maharashtra and in Salem and Erode markets of Madras State, while open agreement system is practised in the States of Orissa and Kerala and in Karur market of Madras State.

The buyers and sellers of turmeric have to pay a number of market charges while selling or buying in assembling markets. These charges include commission for commission agents, brokerage, charges for weighment and handling, municipal tolls and taxes, customary trade allowances, etc. No common basis seems to be adopted while fixing these charges in various assembling markets and therefore they vary widely from market to market. As many as eight to ten different items of market charges are collected from buyers and sellers in almost all the assembling markets, the commission payable to commission agents being the biggest item of charge. The market charges payable to sellers and buyers for marketing hundred rupees worth of turmeric has been found to vary from Rs. 1:50 to Rs. 2:25 in the regulated markets.

From the assembling centres, turmeric is despatched to various distributing and consuming markets. The various agencies engaged in the distribution of turmeric are merchants at assembling markets, exporters, *aratdars*, wholesale merchants at distributing

markets and retail merchants. Merchants at assembling centres are the most important agency, purchasing the bulk of the marketable surplus available in the producing areas. After purchasing the turmeric, they prepare it for despatch to various distributing and consuming markets by sorting, grading, polishing, etc., according to the preferences in these markets. They despatch the produce mostly to the commission agents at distributing markets on consignment basis. Owing to the difficulties involved in storing turmeric at distributing centres, it is despatched to these centres only in small lots of 100 to 150 bags at a time and further despatches are made only after the previous stocks are sold. Regular flow of goods is, however, maintained throughout the year. The commission agents keep the merchants at assembling markets informed about the market situation, ruling prices, etc., and dispose of the produce according to the instructions of the merchants. Generally, 60 to 70% of the value of the produce is paid to the merchants by the commission agents against railway receipts. The commission agents remit the balance, after the produce is sold, deducting the expenses including their commission. Certain merchants prefer to have running accounts with the commission agents and settle their accounts periodically.

Exporters operate mainly in port towns like Bombay, Madras and Cochin and also in the assembling centres like Calicut, Alleppey, Erode and Karur. Exporters purchase turmeric with a view to exporting it to foreign markets and as such quantities purchased by them do not figure in the distribution within the country. Bulk of the exports to foreign countries is made on firm order basis and only very small quantities are exported for sale on commission basis.

The wholesale merchants at distributing centres like Bombay, Calcutta, Delhi, Kanpur and Amritsar purchase turmeric from commission agents in those markets with the help of brokers. After purchase, they do not generally undertake any grading or processing and distribute the turmeric through the retailers in the local markets. They also despatch it to wholesalers in interior consuming markets.

Retailers of turmeric are generally small shopkeepers dealing in all household articles like rice, pulses, oils and other provisions. They get their supplies of turmeric from the local wholesale merchants in small quantities ranging from 10 to 100 lbs. at a time and distribute the same among the consumers. Turmeric is a commodity which is generally purchased by the consumers only in very small quantities ranging from a few tolas to 1 lb. at a time.

The general practice of the housewives hitherto has been to purchase turmeric from the markets in the form of bulbs or fingers and grind it into powder as and when required in their houses. But a change has been noticed in recent times in that the consumers have been found to prefer making purchases in the ready-made powder form rather than in the form of bulbs or fingers. This shift in the consumer's preference has been particularly perceptible in all the urban areas, and the turmeric powder manufacturing industry, therefore, appears to be rapidly developing in the country.

Organised turmeric powder manufacturing units are relatively few and are confined to a few major cities like Calcutta, Bombay,

Madras, etc. There are, however, innumerable small retailers who purchase small lots of turmeric and get them converted into powder in the local grinding mills and cater to the needs of consumers who prefer to get their supplies in powder form.

Turmeric powder usually constitutes nearly 6 to 8% by weight in the composition of curry powder. Curry powder is in demand both within the country and in foreign markets. While there are many small scale manufacturers of curry powder in most of the States catering to the local demand, only a few big scale manufacturers are engaged in the export trade. They are concentrated in cities like Madras and Bombay. Detailed information regarding production and marketing of curry powder is not available. It is, however, known that about 1,500 to 2,000 tons of curry powder valued at Rs. 35 to 40 lakhs are being exported annually to various foreign countries of which U.K., Australia and Caribbean countries are the most important.

In recent times, the demand for curry powder from foreign countries is on the increase and in the present context of declining exports of turmeric, increase in the exports of curry powder should be welcome as turmeric forms an important ingredient in the curry powder.

The various agencies providing finance in the assembling of the produce are village merchants, commission agents, merchants at assembling centres, co-operative societies and banks while in the distribution of turmeric it is financed by scheduled banks and shroffs.

The system of village merchants advancing loans to turmeric cultivators appears to be prevalent only in Orissa State. It is estimated that nearly 60% of the turmeric growers in this State obtain loans from them either in cash or in kind. Generally no interest is levied but this is more than compensated by charging extra weight and low prices at the time of purchase. Whenever interest is charged, the rate is very high varying from 25% to 40%. These village merchants get their finance from the wholesale merchants at the assembling centres.

Commission agents are an important source of finance to cultivators in all the producing areas. They advance loans to the growers liberally at short notice and also as and when required by them without much formality and without insisting on securities. The commission agents recover the loans including the interest from the sale proceeds of the growers and pay only the balance to them. Interest rates charged by them vary from 9 to 12% in Maharashtra State and from 12 to 18% in Andhra Pradesh.

Merchants at assembling centres like Duggirala and Ravulapalem in Andhra Pradesh provide finance to the cultivators for meeting their cultivation and other expenses and later effect purchase of turmeric from them. While making payment to growers, they deduct the loan amount and interest thereon at 9 to 12%. In other producing States, merchants rarely supply finance to cultivators.

Banks do not advance loans to cultivators or village merchants on personal security. But they play a vital role in financing turmeric trade by providing the much needed credit facilities to the commission agents, exporters and wholesale merchants. They provide overdrafts on personal security, advance loans on the pledge of turmeric stored in pits or in godowns to the extent of 60 to 65% of the value on interest at rates varying from 6 to 8½%. They also advance nearly 60 to 70% of the invoice value or against bill of lading or railway receipt.

Shroffs are the indigenous bankers of the country and finance the internal trade in various agricultural commodities including turmeric. They advance loans as banks do, with few formalities. Their main activity, however, is the discounting of "hundies" or drafts or bills of exchange.

Futures trading in turmeric has been carried on in India for many years. Sangli in Maharashtra State has a long tradition of futures trading in turmeric commencing from 1905. Apart from Sangli, futures trade in turmeric has existed also in Karad, Amritsar and Ludhiana, even though Amritsar and Ludhiana are not important markets for turmeric. Some merchants in markets like Erode, Dug-girala, Nizamabad and Hyderabad attempted to organise futures trade in turmeric but failed due to lack of experience and non-fulfilment of commitments. But in all these centres, futures trade was conducted in the earlier period by mutual settlement of futures contracts between traders and later under the rules and bye-laws of the associations formed by the turmeric merchants in these centres.

Growers in villages do not store any turmeric except for the quantities required by them for use as seed. The seed material has to be stored for a period of about 3 to 4 months in the raw form. General practice for storing seed material is to keep the raw rhizomes heaped up under the shade of a tree and cover it with turmeric leaves. The heap is left undisturbed till required. Bulk of the crop is stored in the cured form in the assembling markets and it is released from there to the distribution markets as and when required.

Facilities for storing turmeric in pits are available in all important assembling centres. In some of the important assembling centres like Sangli, Nizamabad, Cuddapah, Salem, Erode and Karur, Central and State warehouses have been established and proper facilities have been provided for storing turmeric.

In distributing and consuming markets, turmeric is not stored in large quantities and for long periods. Generally turmeric is received in these centres in small lots at regular intervals. These bags are stored in pucca godowns owned or hired for this purpose by the commission agents. They collect storage charges from the sellers at the rate of 6 P. to 7 P. per standard maund per month. The wholesale merchants and exporters at Bombay, however, store their stocks of turmeric in pits at Sangli after purchase and carry it to Bombay only when it is required. Nearly 70% of the turmeric stored in pits at Sangli belongs to these agencies at Bombay.

Bullock carts are the most common means of transport or turmeric from the villages to the assembling markets in all the producing States. Transport by lorry is the rule in carrying the produce from the assembling markets to the distributing and consuming markets within the same State. In inter-State transport also, lorries are used in between specific centres. The charges for lorry transport are fixed per bag of turmeric from one centre to another according to local custom but sometimes lorry rates are also quoted on lorry load basis between fixed centres.

A special class of middlemen known as lorry brokers generally arrange for the hiring of these lorries to consignees and for the service rendered they collect a commission ranging from 2 to 3% of the lorry freight from the lorry owners. Lorry freight between any two centres may vary considerably from time to time during a year. For instance, transport charge for one lorry load of turmeric from Cuddapah to Madras has varied from Rs. 140 to as much as Rs. 240 during the year 1960-61.

The trade, however, depends largely on the railways for the inter-State trade in turmeric. All the important assembling centres are linked by rail with the major distributing and consuming markets and transport of turmeric by railways is extensively made use of by the merchants in these centres. No regular statistics regarding the movement of turmeric by rail are maintained. On the basis of the information collected during the present survey, it is estimated that nearly 13 lakh maunds of turmeric representing 58% of the total marketable surplus were despatched by rail from the various assembling markets in India.

Turmeric is sent by steamer from Madras and Kakinada ports to Calcutta. Very small quantities of turmeric are also despatched from the port of Mangalore to Bombay. Except for this coastal trade, steamers are mainly used for shipping turmeric to foreign countries, the important ports of shipment being Bombay, Madras, Cochin and Tuticorin.

During recent years adulteration of turmeric has become a major public health problem attracting the attention of one and all. Enquiries made during the survey showed that in almost all the important assembling markets, merchants are found to use certain chemicals like "chemichrome" or "middle chrome", etc., for imparting artificial colour to turmeric to make it more attractive to the consumers. This practice of colouring turmeric artificially appears to have been introduced originally to cover up the blemishes of poor quality turmeric but later this practice persisted and came to be adopted as a regular process of preparing the produce for sale. The chemicals that are usually used by the trade are some form of lead chromate. In some centres dipping of turmeric bulbs and fingers in solutions of colourless lead compounds like lead acetate is also reported to be resorted to in the belief that such a treatment improves the hardness and pest resistance of the article. Consumption of such adulterated turmeric is highly injurious to health and may even prove fatal.

In the powder form, the adulterants used are wheat bran, rice bran, etc., which are artificially coloured and are added to turmeric powder to increase its bulk.

Adulteration of turmeric fingers and bulbs appears to be practised at the wholesale level but in the powder form, instances of adulteration have been reported right from the source of manufacture up to the retailer.

Vigorous and effective steps are being taken by the public health authorities to prevent adulteration of turmeric under the provisions of Prevention of Food Adulteration Act and rules framed thereunder. Wide publicity is also given in the press regarding the harmfulness of consuming adulterated turmeric. Due to these measures, adulteration of turmeric, which was rampant in the country, appears to be on the decrease. However, the most effective way of counteracting the problem and to ensure purity and quality of the produce to consumers would be to introduce grading of turmeric under "Agmark".

(6) Marketing Costs and Margins

Turmeric producer's net return in the consumer's price varied from 62·8% in Andhra Pradesh, 63·6% in Madras, 69·6% in Orissa and 73·8% in Maharashtra. The comparatively low return in Andhra Pradesh is mainly due to three factors, namely high assembling costs, longer distances through which the produce has to be carried and heavy distribution costs at centres like Calcutta, Delhi and Amritsar. The share of the producers in the consumer's price in Madras State varied from 56·7% to 69·7% while growers in Orissa received a greater share of 66·3% to 76·0% of the consumer's price. The low assembling costs in this State, coupled with the short distances involved in marketing, are mainly responsible for these high returns to the producers. The producers in Maharashtra appear to get the highest share of 69·7% and 78·3% in the consumer's rupee. The number of examples studied in respect of this State is, however, not adequate to form definite conclusions.

In regard to the price-spread examples relating to export to foreign countries, it is seen that the growers in Madras State had as high a share as 77·2% and 81·7% in C.I.F. destination prices as against a share of only 66·5% and 64·6% obtained by the growers in Kerala which is mainly due to absorption of nearly 19·6% to 20% of the destination price towards the transport cost from Cochin to U.S.A.

The total costs involved in the marketing of turmeric have been broadly grouped under three main heads, *viz.*, (1) assembling costs, (2) transport charges from assembling to distributing centres, and (3) distribution costs. In the 19 examples of price-spread under study, the share of the assembling charges in the consumer's price varied from 2·7% to 12·4% with an average of 6·9%. The charges were the maximum in Andhra Pradesh with an average of 9·3%, closely followed by Madras with 9%. In Orissa, the share was comparatively low worth 5·4%, while Maharashtra had the lowest charges accounting for only 3·6% of the consumer's rupee. In Andhra Pradesh,

though turmeric assembling markets are regulated and market charges are prescribed, the merchants at assembling markets, particularly in Cuddapah, continue to collect very high market charges as they were collecting before regulation of markets. Besides, a purchase tax of 6% is also levied for turmeric in this State. These two factors are mainly responsible for the high assembling costs in this State. In Madras, most of the assembling markets for turmeric have not yet been regulated and as a result the market charges are fairly high, particularly in Erode market, as compared to the charges in the regulated markets of Maharashtra and Orissa States.

The charges of transporting turmeric from the assembling markets to distributing centres form a sizable proportion of the consumer's rupee and varied from 3.8% to 6.0%, the variation being mainly due to the mode of transport employed and the distance covered.

The distribution costs in the consumer's price varied from 3.2% to 8.3%. Turmeric from the major producing States like Andhra Pradesh and Madras is despatched to important distributing markets like Calcutta, Bombay, Delhi, Amritsar, Kanpur, etc. The market charges collected in these centres are not only several but are also very high, particularly those collected in Calcutta market, thus increasing the price payable by the consumers.

Total marketing costs on an average were found to be varying from Rs. 5.13 per standard maund to as much as Rs. 12.12 accounting for nearly 12.4% to 23.1% of the price paid by the consumers.

In the export of turmeric, the assembling charges paid varied from Rs. 4.33 to Rs. 6.00 per standard maund in Madras and Kerala States respectively, accounting for 11.4% and 8.4% of the C.I.F. destination price. F.O.B. expenses varied from 58 P. in respect of exports made from Madras State to 74 P. in respect of exports made from Kerala. Their percentage share in the C.I.F. destination price was 1.5% and 1.0% respectively. Steamer freight is an important item of cost in the export trade of turmeric and naturally varies considerably according to the destination. For instance in the case of export of turmeric from Madras State to Colombo, the steamer freight amounted to only Rs. 1.68 per standard maund as against Rs. 14.36 per standard maund in respect of exports from Cochin to New York. The share of the freight charges in the C.I.F. destination price, in respect of four examples studied, varied from 4.4% to 20.2%.

The three important intermediaries who share the gross profits are the merchants at assembling markets, the wholesale merchants at the distributing markets and the retailers in the consuming markets. The margin of merchants at assembling markets varied from 0.8% to 5.7% in the consumer's rupee, the average being 2.3%. The margin of the wholesale merchants at distributing markets in respect of all examples studied varied within narrow limits only, the average being 3.6% of the consumer's rupee. The similarity of the margins of the wholesale merchants in respect of all examples clearly indicates the more or less organised and established nature of turmeric trade in different distributing markets.

Unlike the margins of the wholesale merchants in the distributing markets, the retailers' margin was not found to be uniform. The share of the retailer in the consumer's price varied from 6.1% to 10.8% with an average of 8.7%. Although the margin of the retailers tends to vary from centre to centre, the retailers usually prefer to keep their price at a constant level and small changes in the wholesale price are not usually allowed to influence the daily rates.

The total gross profits of the three intermediaries on an average varied from 13.3% to 17.1% of the consumer's price.

The above discussions clearly admit of the following general observations :

- (1) The growers of turmeric in all the major producing States appear to be getting a fairly good share of the price paid by the consumers of this commodity.
- (2) The assembling charges are significantly high in the States of Andhra Pradesh and Madras.
- (3) Transport charges form a significant part of the marketing costs.
- (4) The distribution costs at some centres like Bombay, Calcutta, Delhi and Amritsar appear to be rather high.
- (5) The margins of the retailers and the mode of retail distribution appear to follow a uniform pattern in all the consuming markets.

RECOMMENDATIONS

A. Supply and Demand

(1) ESTABLISHMENT OF TURMERIC RESEARCH STATIONS

Wide variations have been noticed in the agronomic practices followed in the cultivation of turmeric in the country. The type of seed material used, method of planting, rotation followed, mixed crops grown, manures used, irrigation, time of harvest, curing and processing are all variable factors which have considerable influence on the ultimate yield of the crop. Very little research work has been done so far on these aspects to obtain conclusive results. The two regional research stations that are at present functioning at Pedapalem in Andhra Pradesh and Udaigiri in Orissa State are not adequate for the purpose. In order to intensify agronomic research work on turmeric, it is suggested that two more research stations should be set up in the major producing States, one each in Madras and Maharashtra. These research stations should also undertake a comprehensive breeding programme with a view to increasing outturn of cured turmeric and developing disease resistance in the crop.

(2) INCLUSION OF TURMERIC IN CROP FORECAST

Turmeric constitutes an important cash crop in many of the States where the crop is cultivated. It accounts for nearly 6% of the total area under spices and condiments in India. Futures trading in turmeric is also recognised and is being carried on in the country. But no annual forecast reports of the area and production for this crop are being issued as is being done in the case of many agricultural commodities. It is, therefore, suggested that forecast reports on the annual area and yield of the crop should be published regularly.

(3) NEED FOR CONTROLLING AREA UNDER TURMERIC

During the last ten years the area sown under turmeric has shown wide variations from year to year. This has adversely affected the turmeric trade as a whole and the cultivators in particular. Therefore, there is an urgent need for taking effective measures to control the area under this crop and for ensuring a stable supply position of this commodity.

During the present survey it was seen that normal annual requirements of turmeric in the country to meet both internal and export demand lie around 30 lakh maunds. There appears to be need to keep this fact in view and regulate the annual area under the crop accordingly.

(4) PLACE OF TURMERIC IN INDIAN TRADE CLASSIFICATION

Indian Trade Classification was revised in January 1957 on the basis of Standard International Trade Classification recommended by the Economic and Social Council of the United Nations. Under this revised classification, turmeric has been shown as "Turmeric Bark

and Root" under the main heading "Crude Vegetable Material—Inedible". Since turmeric is widely used as a condiment not only within India but also in many of the foreign countries, the Indian Trade Classification appears to need revision.

(5) STEPPING UP OF EXPORTS OF TURMERIC

Until 1958-59, India's exports of turmeric generally maintained a level above 1 lakh cwts. and reached a peak level of 2.32 lakh cwts. also in the year 1956-57. But there was a big fall during 1959-60 and the position worsened during 1960-61 when India's exports stood at only 0.5 lakh maunds. This decline in the exports was mainly due to precipitous fall in the quantum of exports to Pakistan. There is, therefore, urgent need to explore the possibility of developing new markets.

The following suggestions may be useful in this connection to the Spices Export Promotion Council :

(a) With the replacement of dyes of vegetable origin by cheap coal tar dyes, the demand from foreign countries for turmeric as a source of dye has practically ceased. Therefore greater efforts should be directed towards developing exports of turmeric as a condiment and spice.

(b) Effective publicity should be given in foreign countries by Government of India about turmeric and its uses.

(c) A detailed study on quantitative and qualitative requirements of turmeric of various foreign countries has to be undertaken.

(d) Compulsory grading of turmeric under "Agmark" before export should be attempted.

(e) Exports of curry powder wherein turmeric forms an important ingredient should be increased.

(6) STEPPING UP OF INTERNAL DEMAND

Demand for turmeric within the country is highly inelastic owing to its present large scale utilisation as a condiment only. In order to increase its internal demand, its potentialities as a source of pigment and aromatic essential oil will have to be fully investigated. The Central Food Technological Research Institute may include this aspect of work in their research programmes.

B. Marketing

(7) REGULATION OF MARKETS

The progress made so far in regard to regulation of markets for turmeric in the major producing States of Andhra Pradesh, Madras, Orissa and Kerala is very unsatisfactory. In Andhra Pradesh, market committees, though in existence, are not able to function properly mainly because of the fact that most of the market committees have not yet established market yards for the assembling and sale of the produce. Immediate steps should, therefore, be taken to establish market yards in major assembling centres in this State and to enforce effectively the provisions of the Market Regulatory Act.

Only one market has been brought under regulation in Orissa, though it is a major producing State. In this State, therefore, more markets should be brought under regulation.

In Madras State, turmeric is yet to be brought under the regulatory orbit. Market charges for turmeric collected in Erode market is the highest in the entire country and amounts to as much as 9 to 10% of the consumer's rupee. Immediate need, therefore, exists to regulate this market as well as others which are important for the assembling of the crop.

In Kerala also, turmeric markets are not yet regulated. Efforts should be made to regulate turmeric markets in this State.

(8) CO-OPERATIVE MARKETING OF TURMERIC

Participation of co-operatives in the marketing of turmeric is not at all impressive. There are only a few co-operative societies handling turmeric and the volume of produce handled by them is also very insignificant. With a view to according better marketing facilities to the turmeric growers, a larger number of marketing co-operatives should be established in each of the producing States. The primary societies in each State should form into State Unions and should also establish sale depots with storage accommodation in all the important assembling centres and in important distributing markets like Calcutta, Bombay, Delhi, Madras, Kanpur. Such an arrangement will greatly reduce the number of agencies engaged in the distribution of this produce and will also thoroughly reduce the cost of distribution. It will also help the producers to realise the benefits of better market prices prevailing in these distributing markets. Establishment of these sale depots will also have stabilising influence on the turmeric trade.

(9) FORWARD TRADE IN TURMERIC

For futures trading in turmeric "Rajapuri quality" produced in Maharashtra State has been recognised as the "basis variety" and other commercial qualities like Cuddapah, Duggirala, Nandiyal, Kodur, Nizamabad, Erode and Salem as tenderable varieties against "hedge" contracts. For all these tenderable varieties except the Salem variety, off-allowance varying from 12½% in the case of Cuddapah variety to 3% in the case of Erode variety has been fixed by the Spices and Oil Seeds Exchange Ltd., Sangli. During the present survey it was noticed that a section of the turmeric trade seemed to be dissatisfied with the tendering differences fixed by the Exchange and also with the working of futures trade in turmeric in general. These need review by the Forward Markets Commission.

(10) SURVEY ON PRODUCTION AND MARKETING OF TURMERIC POWDER AND OTHER MANUFACTURED PRODUCTS OF TURMERIC

During the present survey it was observed that consumers of turmeric all over the country and particularly those in urban areas show a preference for turmeric as powder in loose form or in small packets. As a result, the turmeric powder industry is fast developing in the country and appears to have a good future. Such shift in the consumer's preference has far-reaching effects on the future pattern of marketing of turmeric and need continuous market research.

(11) INTRODUCTION OF GRADING OF TURMERIC UNDER 'AGMARK'

Although turmeric is marketed in the country under sixteen commercial qualities, these qualities are indicative at best of only their respective areas of production but are not based on any rational standards of quality. With a view to drawing up grade specifications for turmeric under "Agmark", 130 commercial samples were collected from important producing areas, as well as assembling and distributing markets and these were analysed for various quality factors. Based on the results of their analyses, it has been found possible to prescribe tentative grades and grade specifications for this produce under "Agmark". The suitability of these tentative grades and grade specifications has, however, to be confirmed after further test. Representative trade associations and co-operative societies functioning in important turmeric assembling markets should be persuaded to undertake the task.

(12) PREVENTION OF ADULTERATION.

Adulteration of turmeric is widely prevalent in the country and has become a major public health problem in recent years. Effective measures are being taken by the public health authorities in different States under the provisions of the Prevention of Food Adulteration Act and the Rules framed thereunder to put down the practice of adulteration of turmeric. The most effective way of counteracting this problem and to ensure its purity and quality would be to introduce grading of turmeric under "Agmark" and its wider adoption by the trade. This will not only help consumers in getting unadulterated produce but will also assist in its orderly marketing.

(13) SUGGESTION FOR AMENDMENT TO P.F.A. RULES IN REGARD TO TURMERIC

Under the Prevention of Food Adulteration Rules, rhizomes of the plant belonging to the botanical species *Curcuma longa* only is recognised as turmeric. During the survey, however, it has been noticed that a particular quality of turmeric known as "kasturi" produced in East and West Godavari delta areas in Andhra Pradesh and parts of Tanjavur district of Madras, is marketed as "kasturi turmeric" in a fairly large quantity. This turmeric is reported to belong to the botanical species "*aromatica*". It is, therefore, suggested that the authorities concerned should examine the desirability of amending the existing P.F.A. Rules to include in its scope the rhizomes of "kasturi turmeric" also.

(14) ADOPTION OF PIT STORAGE OF TURMERIC BY CENTRAL AND STATE WAREHOUSES

In Sangli market, turmeric is stored in pucca concrete pits without any ill effects and damage to turmeric. Pit storage of turmeric is also widely followed with advantage by the trade in all the important assembling markets in the country. Central and State warehouses established in various assembling centres at present offer facilities for storage of turmeric above the ground only. It is suggested that Central and State Warehousing Corporations may provide pit storage facilities also in their warehouses.

APPENDICES

APPENDIX I

Area under turmeric in different States in India during the years 1956-57 to 1960-61

Serial No.	State	1956-57	1957-58	1958-59	1959-60	1960-61	Average	Percentage to total
								(In acres)
1.	Andhra Pradesh	57,138	38,877	27,771	29,081	30,308	36,635	34.4
2.	Maharashtra	18,604	18,604	22,300	18,604	18,604	19,343	18.2
3.	Orissa	18,105	18,398	18,605*	18,712	20,317	18,827	17.7
4.	Madras	19,574	13,712	9,281	9,340	9,160	12,213	11.5
5.	Kerala	11,247	11,247	10,597	10,290	9,856	10,649	10.0
6.	West Bengal	2,900	2,900	2,900	2,900	2,900	2,900	2.7
7.	Mysore	2,244	2,079	2,599	2,599	2,599	2,424	2.3
8.	Tripura	1,100	1,200	1,200	1,200	1,200	1,180	1.1
9.	Madhya Pradesh	769	768	683	683	683	717	0.7
10.	Rajasthan	612	637	693	693	693	665	0.6
11.	Others	811	968	942	942	942	921	0.8
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TOTAL		133,104	109,390	97,571	95,044	97,262	106,474	100.0
		(53,865)	(44,268)	(39,486)	(38,462)	(39,361)	(43,088)	

NOTE.—Figures in brackets indicate area in hectares.

APPENDIX II

Estimated area under turmeric and its production in concentrated growing areas in important producing States in India during 1960-61

(Production in terms of cured turmeric)

Region	Concentrated growing areas	Area		Production	
		(Acres)	(Per-centage)	('000 mds.)	(Per-centage)
Andhra Pradesh :					
1. Duggirala . . .	Tenali taluk and parts of Guntur taluk of Guntur district; Ganavaram and Vijayawada taluk of Krishna district.	11,594	38.3	436.1	38.8
2. Cuddapah . . .	Rajempet, Cuddapah, Proddatur, Sidhout and Badvel taluks of Cuddapah district ; parts of other districts in the Rayalaseema region.	6,540	21.6	336.5	30.0
3. Nizamabad . . .	Armoor taluk of Nizamabad district ; parts of Karimnagar district and other districts in Telengana region.	6,268	20.7	128.2	11.4
4. Godavari delta . . .	Kothapettah taluk of East Godavari district ; Malleswaram-Siddhantham area of West Godavari district.	4,196	13.8	120.3	10.7
5. Agency tract . . .	Srikakulam district	1,710	5.6	102.6	9.1
TOTAL . . .		30,308	100.0	1,123.7	100.0
Maharashtra :					
1. Sangli . . .	Tasgaon, Khanapur, Miraj and Walva taluks of Sangli district ; Hatakalangle taluk of Kolhapur district.	9,414	50.6	426.4	60.7
2. Satara . . .	Karad and Patan taluks of Satara district ; parts of Poona and Ratnagiri districts.	3,944	21.2	158.8	22.6
3. Marathwada . . .	Parbhani district and parts of Nanded, Sholapur and Osmanabad districts.	3,479	18.7	72.3	10.3
4. Vidarbha . . .	Chanda district and parts of Nagpur, Amraoti and Wardha districts.	1,767	9.5	45.0	6.4
TOTAL . . .		18,604	100.0	702.5	100.0

APPENDIX II—*contd.*

Region	Concentrated growing areas	Area		Production	
		(Acres)	(Per- cen- tage)	('000 mds.)	(Per- cent- age)
Orissa:					
1. Khond agency	Boudh-Phulbani district; Tikabali, Raika, G. Udaigiri and Balliguda areas of Balliguda sub-division; Khajuripada, Firingia and Katringia areas of Phulbani sub-division.	11,317	55.7	212.7	55.7
2. Koraput agency	Koraput district; Umarkot, Jeypore and Laxmipur areas.	8,066	39.7	151.6	39.7
3. Savara Agency	Gunjam district; Gumma, Raigada, Uppalada and Saranga areas; parts of Denkanal district.	650	3.2	12.2	3.2
4. Plains	Parts of Cuttack, Balasore, Sambalpur and Puri districts.	284	1.4	5.4	1.4
TOTAL		20,317	100.0	381.9	100.0
Madras:					
1. Erode	Gobichettipalayam, Erode and Bhavani taluks of Coimbatore district.	5,065	55.3	201.1	58.8
2. Salem	Salem taluk of Salem district	1,438	15.7	53.0	15.5
3. Karur	Karur, Attur and Kodumudi taluks of Tiruchirapalli district.	834	9.1	27.4	8.0
4. Others	Mainly South Arcot, North Arcot and Thanjavoor districts.	1,823	19.9	60.5	17.7
TOTAL		9,160	100.0	342.0	100.0
Kerala:					
1. Malabar	Wayanad, Perambara and Ernad areas of Calicut district; Iriti, Mattanur and Peravur of Cannanore district; parts of Palghat district.	6,426	65.2	62.5	65.2
2. Travancore and Cochin.	Moovattupuzha, Thodupuzha, Palai, Ponkunnam and Kanchirapalli areas.	3,430	34.8	33.3	34.8
TOTAL		9,856	100.0	95.8	100.0

APPENDIX III

Average yield per acre of turmeric in different States in India during the period from 1956-57 to 1960-61

(In lbs. of cured turmeric.)

Sl. No.	State	1956-57	1957-58	1958-59	1959-60	1960-61	Average
1.	Andhra Pradesh	2,941	2,700	2,491	2,497	3,051	2,736
2.	Orissa	1,547	1,547	1,547	1,556	1,689	1,547
3.	Maharashtra	3,176	3,176	3,024	3,206	2,845	3,137
4.	Madras	3,128	3,261	3,106	3,072	3,072	3,138
5.	Kerala	1,000	1,000	800	800	800	884
6.	West Bengal	2,471	2,471	2,471	2,471	2,471	2,472
7.	Mysore	1,718	1,852	1,437	1,437	1,437	1,560
8.	Tripura	611	709	821	821	821	759
9.	Madhya Pradesh	1,019	712	1,010	1,010	1,010	949
10.	Rajasthan	959	833	948	948	948	928
11.	Others	2,585	2,872	2,501	2,504	2,504	2,596
ALL-INDIA		2,575 (1,168)	2,415 (1,095)	2,237 (1,015)	2,253 (1,022)	2,399 (1,088)	2,376 (1,078)

NOTE.—Figures in brackets indicate yield per acre in kilograms.

APPENDIX IV

Estimated production of turmeric in different States in India during the years 1956-57 to 1960-61

(In maunds of cured turmeric)

Sl.No.	State	1956-57	1957-58	1958-59	1959-60	1960-61	Average	Percentage to total
1.	Andhra Pradesh . . .	20,41,966	12,75,824	8,40,595	8,82,625	11,23,678	12,32,938	39.9
2.	Maharashtra . . .	7,18,149	7,18,149	8,19,525	7,29,174	7,02,449	7,37,489	23.8
3.	Madras . . .	7,43,983	5,43,356	3,50,350	3,48,717	3,41,973	4,65,676	15.1
4.	Orissa . . .	3,40,332	3,45,885	3,49,778	3,51,765	3,81,941	3,53,940	11.4
5.	Kerala . . .	1,36,683	1,36,683	1,03,036	1,00,042	95,822	1,14,453	3.7
6.	West Bengal . . .	87,111	87,111	87,111	87,111	87,111	87,111	2.8
7.	Mysore . . .	46,849	46,795	45,380	45,380	45,380	45,957	1.5
8.	Tripura . . .	8,167	10,344	11,978	11,978	11,978	10,889	0.4
9.	Madhya Pradesh . . .	9,528	6,642	8,384	8,384	8,384	8,265	0.3
10.	Rajasthan . . .	7,132	6,452	7,976	7,976	7,976	7,502	0.2
11.	Others . . .	25,481	33,783	28,665	28,665	28,665	29,052	0.9
TOTAL . . .		41,65,381 (15,54,687)	32,11,024 (11,98,482)	26,52,778 (9,90,123)	26,01,817 (9,71,102)	28,35,357 (10,58,269)	30,93,272 (11,54,533)	100.0

NOTE.—Figures in brackets indicate production in quintals.

APPENDIX V

Estimated production of turmeric bulbs and fingers in different States in India during 1960-61

(Quantity in '000 maunds of cured turmeric)

State	Curcuma longa			Curcuma aromatica			Grand Total
	Bulbs	Fingers	Total	Bulbs	Fingers	Total	
Andhra Pradesh	250.9	752.5	1,003.4	30.0	90.3	120.3	1,123.7
Maharashtra	140.5	562.0	702.5	..	..	..	702.5
Orissa	95.5	286.4	381.9	..	..	..	381.9
Madras	79.0	244.8	323.8	6.5	11.7	18.2	342.0
Kerala	23.9	71.9	95.8	..	..	..	95.8
Others	47.4	142.1	189.5	..	..	..	189.5
TOTAL	637.2 (237.8)	2,059.7 (768.8)	2,696.9 (1,006.6)	36.5 (13.6)	102.0 (38.1)	138.5 (51.7)	2,835.4 (1,058.3)
Percentage to total production in the country.	22.5	72.6	95.1	1.3	3.6	4.9	76.2
							100.0

NOTE.—Figures in brackets indicate quantity in '000 quintals.

APPENDIX VI

Estimated cost of cultivation per acre and cost of production per maund of turmeric in the major producing States in India
(Average of the years 1958-59 to 1960-61)

Sl. No.	Items of expenditure	Andhra Pradesh		Maharashtra		Orissa		Madras		Kerala	
		Rs. P.	Percentage	Rs. P.	Percentage	Rs. P.	Percentage	Rs. P.	Percentage	Rs. P.	Percentage
1.	Preparatory cultivation .	60.60	7.4	75.00	7.4	25.00	8.1	67.50	7.2	30.00	9.0
2.	Manures and manuring .	287.50	35.1	216.00	21.3	43.00	13.8	248.50	26.4	96.00	28.7
3	Seeds and sowing .	242.50	29.6	192.00	19.0	124.50	40.1	220.00	23.4	100.00	29.9
4	After cultivation .	32.00	3.9	80.00	7.9	51.00	16.4	45.00	4.8	45.00	13.4
5.	Irrigation .	100.50	12.3	350.00	34.6	Nil	..	235.00	25.0	Nil	..
6.	Harvesting .	54.50	6.6	40.00	4.0	40.00	12.9	70.00	7.4	45.00	13.4
7.	Land tax .	6.25	0.8	8.00	0.8	2.00	0.6	5.25	0.6	3.70	1.1
A.	Total cost of cultivation .	783.85		961.00		285.50		891.25		319.70	
B.	Cost of curing and processing .	35.00	4.3	51.00	5.0	25.00	8.1	49.00	5.2	15.00	4.5
C.	Total cost of production (A+B) .	818.85	100.0	1,012.00	100.0	310.50	100.0	940.25	100.0	334.70	100.0
D.	Average yield per acre in mds. in terms of cured turmeric.	37 (13.8)	..	39 (14.6)	..	19 (7.1)	..	38 (14.2)	..	12 (4.5)	..
E.	Cost of production in rupees per maun (C÷D).	22.13 (59.34)		25.95 (69.31)		16.34 (43.73)		24.74 (66.21)		27.90 (74.38)	

NOTE.—Figures given in brackets indicate average yield per acre in quintals and cost of production in rupees per quintal.

APPENDIX VII

Estimated quantities of turmeric retained by the growers for various purposes in different States in India

(Average of the years 1956-57 to 1960-61)

(Quantity in terms of '000 maunds of cured turmeric)

State	Total produc- tion	Quantities retained for						Total retention					
		Seed purposes			Domestic consumption		Total retention						
		Bulbs	Fingers	Total	Percentage to total production	Quantity			Percentage to total production				
Andhra Pradesh	.	.	.	1,232.9	139.2	89.5	228.7	18.5	8.0	0.7	236.7	19.2	
Maharashtra	.	.	.	737.5	131.0	..	131.0	17.8	4.9	0.6	135.9	18.4	
Madras	.	.	.	465.7	17.2	25.9	43.1	9.3	4.2	0.9	47.3	10.2	
Orissa	.	.	.	353.9	63.1	17.8	80.9	22.9	2.3	0.6	83.2	23.5	
Kerala	.	.	.	114.5	17.7	7.6	25.3	22.1	1.3	1.2	26.6	23.3	
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	.	Others	.	188.8	22.6	15.2	37.8	20.0	1.9	1.0	39.7	21.0	
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	.	TOTAL INDIA	.	3,093.3 (1,154.5)	390.8 (145.9)	156.0 (58.2)	546.8 (204.1)	17.7	22.6 (8.4)	0.7	569.4 (212.5)	18.4	
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Percentage to total retention												100.0	

NOTE.—Figures in brackets indicate quantity in '000 quintals.

APPENDIX VIII

Monthly arrivals of turmeric in certain important assembling centres expressed as percentages of total annual arrivals
(Average of the years 1958 to 1960)

Month	Andhra Pradesh			Maharashtra			Orissa		Madras	Kerala
	Cudda- pah	Nizama- bad	Duggi- rala	Kotha- petta	Sangli	Karad	Tikabali	Berham- pur	Erode	Cochin
January	7.2	1.7	0.0	12.5	1.3	0.0	2.1	6.7	6.9	6.2
February	14.5	27.0	6.3	31.3	10.1	2.2	9.4	8.8	10.7	18.6
March	16.7	21.7	10.5	18.8	33.0	31.8	11.6	14.8	18.3	31.0
April	28.4	33.5	14.5	12.5	34.6	46.9	22.6	13.2	16.7	37.2
May	14.6	11.4	22.0	9.4	12.4	14.2	30.5	9.5	13.6	6.0
June	14.1	1.9	15.6	7.0	1.0	1.0	11.3	4.6	9.8	1.0
July	0.8	0.9	12.5	4.0	3.7	2.5	2.2	5.6	6.0	0.0
August	0.5	0.6	9.4	2.5	2.6	1.1	1.7	4.4	5.9	0.0
September	0.8	0.4	6.2	2.0	0.3	0.1	1.4	4.4	5.9	0.0
October	0.6	0.2	3.0	0.0	0.3	0.2	0.4	8.8	3.3	0.0
November	0.8	0.3	0.0	0.0	0.2	0.0	2.2	9.8	1.4	0.0
December	1.0	0.4	0.0	0.0	0.5	0.0	4.6	9.4	1.5	0.0
TOTAL PERCENTAGE	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Total average annual arrivals in '000 mds.	206.6	80.0	401.9	85.1	290.6	74.0	4.3	53.8	238.7	24.5

APPENDIX IX

Estimated marketable surplus of turmeric in important producing States in India during 1956-57 to 1960-61

(Quantity in '000 mds. of cured turmeric)

State	Year	Total production	Total Retention		Marketable surplus	
			Quantity	Percentage to total production	Quantity	Percentage to total productio
(1)	(2)	(3)	(4)	(5)	(6)	(7)
Andhra Pradesh	1956-57	2,042.0	306.2	15.0	1,735.8	85.0
	1957-58	1,275.5	221.8	17.4	1,054.0	82.6
	1958-59	840.6	233.4	27.8	607.2	72.2
	1959-60	882.6	202.0	22.9	680.6	77.1
	1960-61	1,123.7	219.9	19.6	903.8	80.4
	Average	1,232.9 (460.2)	236.7 (88.3)	19.2	996.2 (371.9)	80.8
Maharashtra	1956-57	718.1	117.7	16.4	600.4	83.6
	1957-58	718.1	140.2	19.5	577.9	80.5
	1958-59	819.5	141.1	17.2	678.4	82.8
	1959-60	729.2	140.2	19.2	589.0	80.8
	1960-61	702.5	140.2	20.0	562.3	80.0
	Average	737.5 (275.3)	135.9 (50.7)	18.4	601.6 (224.6)	81.6
Orissa	1956-57	340.3	80.5	23.7	259.8	76.3
	1957-58	345.9	81.4	23.5	264.5	76.5
	1958-59	349.8	81.9	23.4	267.9	76.6
	1959-60	351.8	89.9	25.6	261.9	74.4
	1960-61	381.9	82.4	21.6	299.5	78.4
	Average	353.9 (132.1)	83.2 (31.1)	23.5	270.7 (101.0)	76.5
Madras	1956-57	744.0	65.0	8.7	679.0	91.3
	1957-58	543.4	44.2	8.1	499.2	91.9
	1958-59	350.4	42.9	12.2	307.5	87.8
	1959-60	348.7	42.2	12.1	306.5	87.9
	1960-61	342.0	42.1	12.3	299.9	87.7
	Average	465.7 (173.8)	47.3 (17.6)	10.2	418.4 (156.2)	89.8

APPENDIX IX—*contd.*

(1)	(2)	(3)	(4)	(5)	(6)	(7)
Kerala	1956-57	136.7	28.7	21.0	108.0	79.0
	1957-58	136.7	27.1	19.8	109.6	80.2
	1958-59	103.0	27.0	26.2	76.0	73.8
	1959-60	100.0	25.2	25.2	74.8	74.8
	1960-61	95.8	25.2	26.3	70.6	73.7
	Average	114.5	26.6	23.3	87.9	76.7
		(42.7)	(9.9)		(32.8)	
Other States	1956-57	184.3	38.7	21.0	145.6	79.0
	1957-58	191.1	40.1	21.0	151.0	79.0
	1958-59	189.5	39.8	21.0	149.7	79.0
	1959-60	189.5	39.8	21.0	149.7	79.0
	1960-61	189.5	39.8	21.0	149.7	79.0
	Average	188.8	39.7	21.0	149.1	79.0
		(70.5)	(14.8)		(55.7)	
Total India	1956-57	4,165.4	636.8	15.3	3,528.6	84.7
	1957-58	3,211.0	554.8	17.3	2,656.2	82.7
	1958-59	2,652.8	566.1	21.3	2,086.7	78.7
	1959-60	2,601.8	539.3	20.7	2,062.5	79.3
	1960-61	2,835.4	549.6	19.4	2,285.8	80.6
	Average	3,093.3	569.4	18.4	2,523.9	81.6
		(1,154.6)	(212.4)		(942.2)	

NOTE.—Figures in brackets indicate quantity in '000 quintals.

APPENDIX X

Periodicity of exports of turmeric from India during the years 1947-48 to 1960-61
(Quantity in cwts.)

Month	1947-48	1948-49	1949-50	1950-51	Average	Percentage
April . . .	8,771	14,667	17,290	16,015	14,186	9.6
May . . .	6,252	11,638	13,737	25,984	14,403	9.8
June . . .	5,218	7,427	14,824	11,420	9,722	6.6
July . . .	3,449	20,060	18,885	15,731	14,531	9.8
August . . .	3,726	14,833	16,186	19,821	13,642	9.2
September . . .	4,226	11,936	6,828	12,526	8,881	6.0
October . . .	6,412	8,809	16,581	10,185	10,497	7.1
November . . .	1,924	17,372	19,447	15,404	13,537	9.2
December . . .	5,386	8,615	10,595	18,673	10,817	7.3
January . . .	3,249	9,618	10,229	16,311	9,852	6.7
February . . .	2,572	13,424	8,917	10,025	8,734	5.9
March . . .	9,852	12,637	19,348	33,486	18,831	12.8
TOTAL . . .	61,037 (31,008)	151,036 (76,729)	172,867 (87,820)	205,591 (1,04,444)	147,633 (75,000)	100.0

Month	1951-52	1952-53	1953-54	1954-55	1955-56	Average	Percentage
April . . .	34,468	20,375	9,851	10,882	16,001	18,315	12.3
May . . .	22,215	16,789	8,096	15,964	19,517	16,516	11.1
June . . .	23,029	12,204	5,575	9,406	10,081	12,059	8.1
July . . .	14,180	10,295	5,859	10,386	7,634	9,671	6.5
August . . .	14,989	11,594	5,177	11,392	2,782	9,187	6.1
September . . .	17,033	8,827	6,084	5,823	7,252	9,004	6.0
October . . .	13,113	10,714	11,923	5,263	7,412	9,685	6.5
November . . .	15,064	15,118	13,495	7,211	12,212	12,620	8.4
December . . .	8,557	15,515	9,335	6,330	8,009	9,549	6.4
January . . .	20,736	14,856	7,936	5,382	12,125	12,207	8.2
February . . .	11,006	5,440	11,161	14,803	19,013	12,285	8.2
March . . .	17,311	11,623	21,325	23,270	17,261	18,158	12.2
TOTAL . . .	211,701 (1,07,548)	153,350 (77,905)	115,817 (58,837)	126,112 (64,067)	139,299 (70,767)	149,256 (75,825)	100.0

APPENDIX X—*contd.*

Month	1956-57	1957-58	1958-59	1959-60	1960-61	Average	Percentage
April .	28,771	31,222	15,115	5,389	8,597	17,819	12·7
May .	32,613	29,006	17,790	3,421	3,544	17,275	12·4
June .	28,695	17,191	7,730	4,122	3,049	12,157	8·7
July .	28,096	18,165	13,798	4,168	1,773	13,200	9·4
August .	23,564	24,103	11,312	3,690	2,041	12,942	9·3
September	15,950	17,289	7,861	3,427	1,336	9,173	6·6
October .	11,498	14,464	14,310	2,226	1,605	8,820	6·3
November .	13,910	3,486	12,586	3,581	2,350	7,183	5·1
December .	6,310	20,094	13,698	4,686	4,945	9,946	7·1
January .	12,557	16,198	10,883	4,140	2,698	9,295	6·7
February .	12,328	15,377	11,837	7,060	6,984	10,717	7·7
March .	18,163	17,707	5,403	8,434	6,551	11,252	8·0
TOTAL .	232,455 (1,18,092)	224,302 (1,13,950)	142,323 (72,303)	54,344 (27,608)	45,473 (23,101)	139,779 (71,011)	100·0

NOTE.—Figures in brackets indicate exports in quintals.

APPENDIX XI

Quantity and value of exports of turmeric from India to different destinations during the period from 1947-48 to 1960-61

Country	1947-48		1948-49		1949-50		1950-51		Average	
	Quantity	Value	Quantity	Value	Quantity	Value	Quantity	Value	Quantity	Value
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
	(cwts.)	Rs.	(cwts.)	Rs.	(cwts.)	Rs.	(cwts.)	Rs.	(cwts.)	Rs.
1. United Kingdom	4,588	2,97,411	10,065	5,46,363	11,569	6,75,735	6,730	3,75,502	8,238	4,73,753
2. Ceylon	15,842	7,68,454	14,053	7,38,250	16,668	8,89,799	18,355	8,47,605	16,230	8,11,027
3. Iran	2,196	1,30,411	22,107	13,22,328	21,934	14,35,943	25,731	13,63,302	17,992	10,62,996
4. Arabia*	1,680	91,934	12,457	7,51,833	4,148	2,51,701	17,425	10,24,502	8,928	5,29,992
5. Pakistan West	2,103	96,684	44,242	22,66,014	50,512	31,58,828	24,112	14,63,712	30,242	17,46,310
6. Pakistan East	..	..	7,676	4,15,357	9,331	5,64,163	22,988	13,26,502	9,999	5,76,506
7. U.S.A.	6,291	3,39,321	10,892	6,38,431	14,618	12,75,387	19,529	19,00,550	12,832	10,38,422
8. Aden	53	2,270	1,632	82,342	4,619	2,79,524	8,848	4,56,840	3,788	2,05,244
9. Singapore	4,588	2,55,006	7,026	4,14,579	9,532	6,04,809	10,427	6,47,307	7,893	4,80,425
10. Malaya	337	15,532	52	3,344	68	4,590	3,886	2,40,616	1,086	66,020
11. Japan	..	..	..	..	973	78,143	3,572	2,72,434	1,136	87,644
12. France	3,451	1,83,499	500	15,700	4,717	2,70,603	4,815	2,80,364	3,371	1,87,542
13. Other countries	19,908	10,62,560	20,334	12,32,707	24,178	15,32,863	39,173	23,83,925	25,898	15,53,014
TOTAL	61,037	32,43,082	1,51,036	84,27,248	1,72,867	1,10,22,088	2,05,591	1,25,83,161	1,47,633	88,18,895
	(31,008)		(76,729)		(87,820)		(104,444)		(75,000)	

*Read after 1949-50 as Kuwait.

APPENDIX XI—contd.

Country	1951-52		1952-53		1953-54		1954-55		1955-56		Average	
	Quantity	Value	Quantity	Value	Quantity	Value	Quantity	Value	Quantity	Value	Quantity	Value
(1)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)	(21)	(22)	(23)
	(c wts.)	Rs.	(c wts.)	Rs.	(c wts.)	Rs.	(c wts.)	Rs.	(c wts.)	Rs.	(c wts.)	Rs.
1. United Kingdom.	8,484	4,01,927	5,615	1,60,996	5,227	2,84,664	6,432	4,22,241	8,265	6,20,046	6,805	3,77,975
2. Ceylon	17,162	6,20,969	18,542	4,64,365	15,578	7,82,847	13,638	10,40,328	16,115	12,19,103	16,207	8,25,522
3. Iran	19,476	8,28,997	8,316	2,00,432	4,659	2,65,390	24,094	21,41,882	14,656	11,98,119	14,240	9,26,694
4. Arabia*	5,110	2,03,587	7,517	2,00,742	8,664	4,66,644	2,468	2,89,400	9,736	8,06,759	6,699	3,93,426
5. Pakistan West.	65,837	34,29,372	27,915	8,01,264	8,324	4,85,586	11,886	10,17,374	13,446	11,62,447	25,481	13,79,209
6. Pakistan East.	13,362	5,83,993	10,024	2,87,170	1,531	95,826	689	46,305	582	59,411	5,38	2,14,541
7. U.S.A.	7,638	5,66,186	12,318	6,33,018	10,278	8,15,144	17,185	19,44,548	17,690	18,31,757	13,022	11,58,131
8. Aden	8,739	2,84,636	7,895	1,84,983	6,911	3,62,109	8,775	6,85,720	10,023	7,91,068	8,469	4,61,703
9. Singapore	6,788	3,15,376	7,874	3,00,524	9,926	4,72,853	5,458	4,69,338	4,207	3,66,403	6,851	3,84,899
10. Malaya	5,416	2,36,873	6,060	1,99,028	5,634	3,47,931	3,845	3,23,769	4,935	4,32,880	5,178	3,08,096
11. Japan	2,692	1,50,348	5,869	1,90,609	4,098	1,99,844	2,245	1,81,194	3,224	3,25,182	3,625	2,09,435
12. France	10,612	5,01,628	5,227	1,67,432	2,744	1,36,768	1,830	1,23,828	4,974	3,52,492	5,077	2,56,430
13. Other countries.	40,385	19,02,140	30,178	9,01,444	32,243	18,38,054	27,567	23,13,460	31,446	28,37,652	32,364	19,58,820
TOTAL	2,11,701 (1,07,548)	1,00,26,032	1,53,350 (77,905)	46,92,007	1,15,817 (58,837)	65,53,660	1,26,112 (64,067)	1,09,99,387	1,39,299 (70,767)	1,20,03,319	1,49,256 (75,825)	88,54,881

*Read after 1949-50 as Kuwait.

APPENDIX XI—concl'd.

Country	1956-57		1957-58		1958-59		1959-60		1960-61		Average	
	Quantity	Value	Quantity	Value	Quantity	Value	Quantity	Value	Quantity	Value	Quantity	Value
(1)	(24)	(25)	(26)	(27)	(28)	(29)	(30)	(31)	(32)	(33)	(34)	(35)
	(cwts.)	Rs.	(cwts.)	Rs.	(cwts.)	Rs.	(cwts.)	Rs.	(cwts.)	Rs.	(cwts.)	Rs.
1. United Kingdom.	11,649	6,93,419	10,082	3,36,398	1,846	54,152	3,066	1,59,546	4,207	2,16,320	6,170	2,91,967
2. Ceylon	15,766	5,25,683	10,195	2,04,886	21,183	5,76,201	21,139	8,47,758	11,120	5,00,827	15,881	5,31,071
3. Iran	54,795	24,43,889	38,472	8,72,973	35,013	9,62,108	1,538	53,214	88	3,563	25,981	8,67,149
4. Arabia*	2,412	1,02,121	1,599	34,665	1,425	37,734	..	..	..	..	1,087	34,904
5. Pakistan West..	27,217	12,69,673	35,021	10,15,643	1,838	61,044	243	8,736	37	1,225	12,871	4,71,264
6. Pakistan East.	5,482	2,50,180	15,516	4,08,086	238	6,823	..	..	..	..	4,247	1,33,018
7. U.S.A.	11,326	6,67,217	14,444	7,36,968	9,197	2,63,249	6,802	6,28,446	7,284	5,60,907	9,810	5,71,357
8. Aden	15,917	6,98,709	10,525	2,46,385	6,932	1,85,810	279	10,454	925	54,533	6,916	2,39,178
9. Singapore	10,914	5,62,792	12,804	3,46,257	11,580	3,62,145	1,684	77,448	2,160	1,18,845	7,828	2,93,498
10. Malaya	4,281	1,96,898	6,829	1,67,861	6,075	1,90,050	5,835	2,76,738	4,564	2,29,597	5,517	2,12,229
11. Japan	10,388	6,11,163	10,094	3,88,690	3,320	1,16,623	3,644	1,72,396	1,737	96,108	5,837	2,76,996
12. France	8,489	3,80,896	2,950	92,995	94	2,858	200	9,931	1,014	53,955	2,549	1,08,127
13. Other countries.	53,819	27,33,974	55,771	16,83,872	43,582	16,60,994	9,914	5,80,610	12,337	7,48,101	35,085	14,81,510
TOTAL	2,32,455 (1,18,092)	1,11,36,614	2,24,302 (1,13,950)	65,35,679	1,42,323 (72,303)	44,79,791	54,344 (27,608)	28,25,277	45,473 (23,101)	25,83,981	1,39,779 (71,011)	55,12,268

*Read after 1949-50 as Kuwait.

NOTE.—Figures given in brackets indicate quantities in quintals.

APPENDIX XII

Estimated total and net available supplies of turmeric in India during 1956-57 to 1960-61

(Quantities in '000 maunds of cured turmeric)

	1956-57	1957-58	1958-59	1959-60	1960-61	Average
1. Total production	4,165·4	3,211·0	2,652·8	2,601·8	2,835·4	3,093·3
2. Imports	Nil	Nil	Nil	Nil	Nil	Nil
3. Total supplies	4,165·4	3,211·0	2,652·8	2,601·8	2,835·4	3,093·3
4. Quantities retained by growers for seed	609·0	528·9	546·2	520·0	529·7	546·8
5. Net supplies available for internal consumption and export.	3,556·4	2,682·1	2,106·6	2,081·8	2,305·7	2,546·5
6. Exports	316·4 (118·1)	305·3 (114·0)	193·7 (72·3)	74·0 (27·6)	61·9 (23·1)	190·2 (71·0)
7. Net supplies available for internal consumption	3,240·0 (1,209·3)	2,376·8 (887·1)	1,912·9 (714·0)	2,007·8 (749·4)	2,243·8 (837·5)	2,356·3 (879·5)

NORE.—Figures given in brackets indicate quantity in '000 quintals.

APPENDIX XIII

Estimated demand for various commercial qualities of turmeric in India during 1960-61 (excluding demand for seed and domestic consumption)
(000 maunds)

Sl. No.	Commercial qualities	Bulbs		Fingers		Total polished	Total Unpolished	Total demand	Percentage to total demand
		Polished	Unpolished	Polished	Unpolished				
1.	Rajapuri	3.2	..	465.2	..	468.4	..	468.4	20.5
2.	Duggirala	24.7	..	222.1	103.5	246.8	103.5	350.3	15.3
3.	Cuddapah	63.1	..	116.7	35.0	179.8	35.0	214.8	9.4
4.	Erode	42.3	..	121.2	12.8	163.5	12.8	176.3	7.7
5.	Berhampur	..	18.3	..	148.5	..	166.8	166.8	7.3
6.	Koraput	1.3	11.7	1.5	104.4	2.8	116.1	118.9	5.2
7.	Nizamabad	32.2	..	82.5	..	114.7	..	114.7	5.0
8.	Kasturi	3.2	9.3	18.2	76.2	21.4	85.5	106.9	4.7
9.	Chhaya	..	15.1	..	76.7	..	91.8	91.8	4.0
10.	Kodur	15.1	..	22.3	13.8	37.4	13.8	51.2	2.2
11.	Salem	9.8	..	31.5	5.2	41.3	5.2	46.5	2.0
12.	Waigaon	..	0.7	..	35.3	..	36.0	36.0	1.6
13.	Alleppey	..	1.7	..	22.9	..	24.6	24.6	1.1
14.	Karur	5.5	..	13.8	4.7	19.3	4.7	24.0	1.1
15.	Tekurpettah	..	5.1	..	12.0	..	17.1	17.1	0.8
16.	Savara	1.2	..	..	8.4	1.2	8.4	9.6	0.4
17.	Others	7.6	29.5	16.4	214.4	24.0	243.9	267.9	11.7
TOTAL		209.2	91.4	1,111.4	873.8	1,320.6	965.2	2,285.8	100.0
Percentage to total demand		9.2	4.0	48.6	38.2	57.8	42.2	100.0	

APPENDIX XIV

Estimated quantities of turmeric available for consumption in different States in India during 1960-61

	Andhra Pradesh	Maharashtra	Orissa	Madras	Kerala	Others	Total India
A. Production in the State .	1,123.7	702.5	381.9	342.0	95.8	189.5	2,835.4
Imports from other States .	8.5	159.8	..	31.6	27.1	1,101.9	..
Total	1,132.2	862.3	381.9	373.6	122.9	1,291.4	2,835.4
B. Deduct :							
Seed . . .	213.2	135.5	80.1	39.0	24.0	37.9	529.7
Exports to other Indian States .	705.6	412.5	91.5	113.6	5.7	..	..
Exports to foreign countries .	..	32.0	..	16.3	13.6	..	61.9
Total	918.8	580.0	171.6	168.9	43.3	37.9	591.6
C. Total quantities of cured turmeric available for consumption (A—B).	213.4	282.3	210.3	204.7	79.6	1,253.5	2,243.8
D. Population (in '000) .	35,978	39,504	17,566	33,651	16,875	294,850	438,424
E. Per capita consumption in lbs.	0.49	0.59	0.98	0.50	0.39	0.35	0.42

APPENDIX XV

Average monthly wholesale prices of turmeric in important assembling centres in India

DUGGIRALA MARKET (*Duggirala finger quality*)

(Rupees per standard maund)

Month	1951-52	1952-53	1953-54	1954-55	1955-56	1956-57	1957-58	1958-59	1959-60	1960-61
April	19.25	16.46	22.63	29.46
May	19.25	16.05	22.63	30.45
June	17.69	17.28	23.45	31.60
July	18.10	16.05	25.51	32.26
August	17.28	19.75	28.14	36.86
September	12.34	18.93	32.42	31.27
October	13.99	20.57	34.31	31.27
November	16.46	19.75	35.79	30.12
December	16.46	16.46	34.15	32.26
January	17.28	16.46	33.74	28.96
February	14.81	22.63	31.76	28.96
March	15.63	22.63	28.80	27.98
AVERAGE	16.55	18.59	29.44	30.9

Source : State Marketing Officer, Andhra Pradesh.

APPENDIX XV—contd.

CUDDAPAH MARKET (*Cuddapah finger quality*)

Month	1951-52	1952-53	1953-54	1954-55	1955-56	1956-57	1957-58	1958-59	1959-60	1960-61
April
May
June
July
August
September
October
November
December
January
February
March

AVERAGE

.	22.57	17.42	38.81	60.99	55.62	21.27	13.55	18.02	29.48	31.41
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Source : State Marketing Officer, Andhra Pradesh.

APPENDIX XV — contd.
NIZAMABAD MARKET (*Nizamabad quality*)

Month	1951-52	1952-53	1953-54	1954-55	1955-56	1956-57	1957-58	1958-59	1959-60	1960-61
April	33.67	11.56	16.40	25.12	42.87	30.54	14.25	14.00	16.92	26.54
May	28.12	11.52	26.37	34.71	46.90	24.15	14.62	12.46	20.75	26.28
June	30.75	11.50	23.00	37.94	52.27	25.21	13.61	14.83	22.17	34.20
July	22.65	12.71	23.40	38.46	61.98	20.80	11.00	13.25	21.33	33.17
August	18.58	10.85	27.75	40.31	52.67	20.71	10.21	12.21	23.09	33.81
September	16.65	12.40	28.81	53.33	48.60	20.17	7.96	13.54	26.58	20.97
October	18.19	11.44	33.08	64.96	54.71	16.04	9.33	13.33	28.29	22.57
November	18.54	12.17	31.08	68.21	58.04	17.58	11.37	16.67	32.58	27.88
December	17.62	11.54	27.04	58.06	42.90	16.62	9.46	16.00	18.67	13.90
January	16.92	14.37	25.87	46.85	30.00	15.52	11.21	14.00	25.00	14.92
February	16.40	14.17	23.02	38.17	46.87	16.83	11.75	17.17	18.92	14.50
March	11.15	18.06	24.73	34.12	31.46	16.83	14.83	16.71	24.50	17.75
AVERAGE	20.77	12.65	25.88	45.02	47.44	20.08	11.63	14.51	23.23	23.87

Source : State Marketing Officer, Andhra Pradesh.

APPENDIX XV—contd.
SANGLI MARKET (*Rajapuri quality*)

Month	1951-52	1952-53	1953-54	1954-55	1955-56	1956-57	1957-58	1958-59	1959-60	1960-61
April	27.12	14.31	25.25	44.50	65.25	47.06	22.50	20.25	30.00	34.00
May	27.12	12.50	28.75	49.25	62.19	38.56	20.00	19.00	27.00	36.50
June	27.12	18.50	29.37	46.25	67.50	31.37	18.50	19.00	28.00	34.00
July	27.12	14.19	32.62	49.37	73.75	32.25	16.00	22.50	26.00	34.00
August	27.12	13.81	32.12	55.81	73.75	32.25	16.00	19.50	26.00	35.00
September	27.12	14.00	33.62	64.50	67.50	62.50	16.00	23.50	30.00	34.00
October	22.00	13.19	35.25	75.50	64.50	30.25	16.00	26.00	33.00	33.59
November	21.50	14.50	34.50	73.00	63.50	27.12	16.75	22.50	33.50	33.59
December	23.50	12.75	40.62	69.12	53.87	27.12	14.00	20.00	33.00	33.59
January	22.37	17.69	41.31	70.94	50.94	22.37	17.00	29.00	35.00	33.59
February	17.75	27.12	37.62	56.00	49.00	26.12	18.25	30.50	37.00	33.59
March	14.00	12.94	38.62	55.50	48.50	25.25	20.00	32.00	36.50	35.08
AVERAGE	23.65	15.46	34.14	59.15	61.69	33.52	17.58	23.65	31.25	34.21

Source : Agricultural Produce Market Committee, Sangli

APPENDIX XV—contd.

KARAD MARKET (*Rajapuri Karadi quality*)

Month		1951-52	1952-53	1953-54	1954-55	1955-56	1956-57	1957-58	1958-59	1959-60	1960-61
April	.	N.A.	16.00	28.19	43.87	64.44	43.75	21.19	21.01	27.85	34.30
May	.	N.A.	16.00	31.75	48.19	65.25	34.25	19.19	18.30	27.02	34.20
June	.	N.A.	16.00	32.00	45.25	64.94	29.00	16.94	18.42	24.60	33.90
July	.	N.A.	16.00	32.00	49.62	70.25	29.69	15.12	18.61	28.75	33.10
August	.	N.A.	16.00	32.00	56.00	68.75	28.25	12.69	21.99	28.60	35.15
September	.	N.A.	16.00	35.75	69.75	65.00	25.75	12.12	22.00	31.83	33.75
October	.	N.A.	16.00	36.31	73.56	63.50	24.00	15.25	22.27	35.32	31.38
November	.	N.A.	15.00	37.00	70.00	63.00	24.50	15.75	23.33	34.64	31.38
December	.	N.A.	15.00	39.25	67.56	55.75	24.50	15.81	20.17	34.64	31.38
January	.	N.A.	18.00	40.87	67.12	52.25	23.50	15.25	19.03	34.64	31.38
February	.	N.A.	23.00	36.25	55.94	48.37	25.00	16.13	28.93	36.50	33.00
March	.	N.A.	24.31	37.31	54.81	47.56	23.87	16.65	28.87	34.15	33.00
AVERAGE		N.A.	17.27	34.89	58.47	60.75	28.01	16.01	21.91	31.55	32.99

Source : Agricultural Produce Market Committee, Karad.

APPENDIX XV—contd.

ERODE MARKET (Erode quality)

Month	1956-57		1957-58		1958-59		1959-60		1960-61	
	Fingers	Bulbs	Fingers	Bulbs	Fingers	Bulbs	Fingers	Bulbs	Fingers	Bulbs
April	46.25	..	17.37	16.16	24.29	15.56	35.49	24.91	35.20	29.36
May	37.62	26.54	16.99	13.44	20.18	13.74	34.68	26.05	35.40	30.45
June	31.25	23.42	14.08	10.38	18.71	14.11	34.52	25.09	35.71	30.54
July	30.04	24.92	14.85	11.56	20.39	15.93	35.65	27.23	40.00	35.74
August	29.47	23.58	15.56	11.71	21.34	16.68	37.10	28.50	42.06	36.47
September	25.81	22.00	15.19	11.49	19.10	16.17	38.11	28.24	42.46	36.26
October	23.44	19.92	13.34	9.48	19.43	14.88	46.19	34.62	41.30	35.33
November	22.50	18.05	19.86	14.52	18.21	13.99	43.43	34.90	40.71	34.53
December	21.17	17.20	18.97	14.23	19.48	13.48	41.14	30.68	40.12	33.04
January	16.62	13.56	16.30	10.37	20.64	14.18	44.53	34.43	40.26	33.17
February	16.62	..	14.71	8.33	24.40	17.64	40.67	30.86	36.88	29.23
March	17.62	14.62	21.14	14.08	30.12	21.71	35.63	28.60	34.13	27.08
AVERAGE	26.53	20.38	16.53	12.15	21.36	15.67	38.93	29.51	38.68	32.60

Source : Fort St. George Gazette, Madras.

APPENDIX XV—contd.

COCHIN MARKET (*Alleppey finger quality*)

Month		1951-52	1952-53	1953-54	1954-55	1955-56	1956-57	1957-58	1958-59	1959-60	1960-61
April	.	64.96	11.79	22.49	68.88	76.53	34.44	15.77	15.92	27.86	40.22
May	.	27.55	10.81	22.65	81.12	70.41	34.07	15.61	13.16	26.05	36.73
June	.	23.88	10.71	24.79	63.52	61.22	35.20	13.47	11.33	21.43	36.73
July	.	24.34	10.29	30.61	65.82	61.22	26.02	11.63	12.24	24.12	39.80
August	.	18.37	13.16	30.46	52.04	61.22	24.49	11.27	12.24	22.96	40.56
September	.	15.31	10.04	34.13	61.22	61.22	25.25	9.18	12.24	25.65	40.56
October	.	12.24	10.10	38.27	65.82	61.22	24.34	10.10	12.24	32.14	41.06
November	.	13.35	10.10	39.49	75.00	56.63	22.96	16.07	12.70	35.23	41.06
December	.	13.01	10.56	37.50	64.29	57.40	21.43	16.99	13.78	31.77	41.06
January	.	10.56	12.24	46.22	67.35	55.10	20.14	24.03	26.02	45.46	42.92
February	.	5.94	24.49	52.04	69.61	54.34	16.38	26.45	39.03	41.33	42.46
March	.	16.53	35.20	65.82	73.47	44.02	15.46	22.19	32.54	39.03	45.53
AVERAGE		20.50	14.12	37.04	67.35	60.04	25.01	16.06	17.79	31.09	40.72

Source : The Indian Chamber of Commerce, Cochin.

APPENDIX XV—concl'd.

BERHAMPUR MARKET (*Berhampuri finger quality*)

Month	1956-57	1957-58	1958-59	1959-60	1960-61
April	43.37	23.62	15.21	26.00	29.00
May	40.12	18.50	16.00	24.50	29.75
June	40.12	19.12	17.56	25.31	34.94
July	35.31	18.37	17.56	28.81	35.25
August	37.69	16.12	17.33	25.75	35.25
September	37.69	16.25	17.25	30.50	35.83
October	34.50	16.12	16.00	30.62	38.00
November	32.94	16.75	16.00	31.00	35.00
December	26.81	16.31	16.25	27.37	26.13
January	30.62	15.40	21.44	29.87	26.87
February	30.62	15.21	25.19	31.75	26.13
March	30.62	15.21	22.75	29.87	22.39
AVERAGE	35.03	17.25	18.21	28.45	31.21

Source: Monthly Price Bulletin, Orissa.

APPENDIX XVI

Average monthly wholesale prices of turmeric in important distributing centres in India

BOMBAY MARKET (*Rajapuri quality*)

(Rupees per standard maund)

Month	1956-57	1957-58	1958-59	1959-60	1960-61
April . . .	50.09	25.00	22.76	30.88	36.47
May . . .	40.78	24.56	19.46	30.21	38.57
June . . .	35.62	21.67	19.46	28.75	37.97
July . . .	35.40	18.77	21.60	29.77	38.85
August . . .	36.15	18.29	21.44	32.77	38.48
September . . .	32.00	17.13	24.28	33.02	38.17
October . . .	28.56	18.75	25.65	37.76	36.53
November . . .	31.87	22.12	23.92	37.14	36.20
December . . .	31.87	20.24	22.96	35.91	37.47
January . . .	28.89	19.77	24.82	39.18	37.47
February . . .	30.06	19.30	26.90	38.86	37.47
March . . .	26.81	20.90	29.63	37.04	37.47
AVERAGE . . .	34.01	20.54	23.57	34.27	37.59

Source ; Market Research Officer, Bombay,

MADRAS MARKET (*Erode Finger quality*)

(Rupees per standard maund)

Month	1956-57	1957-58	1958-59	1959-60	1960-61
April . . .	45.25	22.21	22.21	39.49	40.49
May . . .	38.98	22.21	21.09	39.33	40.31
June . . .	33.84	18.94	19.41	38.67	42.01
July . . .	31.09	18.31	21.07	39.00	41.90
August . . .	29.08	15.30	21.46	39.07	41.76
September . . .	27.78	14.81	21.72	39.76	40.64
October . . .	26.34	13.99	22.72	44.15	40.32
November . . .	23.52	18.52	22.72	46.90	39.19
December . . .	23.12	18.94	22.56	46.90	38.37
January . . .	20.83	17.28	21.69	46.90	39.19
February . . .	20.83	17.28	34.55	46.49	41.06
March . . .	23.87	17.56	33.46	46.08	39.94
AVERAGE . . .	28.71	17.95	23.72	42.73	40.43

Source : Fort St, George Gazette, Madras.

APPENDIX XVI—contd.

CALCUTTA MARKET

Month	1951-52		1952-53		1953-54		1954-55		1955-56	
	Cuddapah quality	Erode quality	Cuddapah quality	Erode quality	Cuddapah quality	Erode quality	Cuddapah quality	Erode quality	Cuddapah quality	Erode quality
April	42.50	43.50	30.00	27.75	32.25	30.00	56.37	51.20	79.81	66.50
May	43.50	41.00	29.19	24.00	33.19	32.50	54.00	52.00	77.50	66.25
June	43.69	36.00	24.25	22.50	35.75	34.25	53.00	50.25	74.50	68.00
July	37.75	37.00	22.50	22.39	37.19	42.59	53.81	57.80	68.37	77.00
August	32.19	33.59	21.50	22.00	43.25	50.25	55.00	65.75	70.00	75.00
September	32.00	34.50	21.87	22.00	52.75	54.00	69.75	82.00	72.37	73.89
October	32.00	37.25	21.75	21.80	55.50	54.80	83.00	90.25	74.00	76.25
November	34.37	37.59	21.00	22.00	54.50	58.75	85.00	98.25	75.00	75.00
December	34.00	34.59	21.00	24.87	55.00	58.00	88.00	103.59	75.37	73.59
January	32.50	32.59	21.12	27.80	53.00	58.75	82.00	99.50	76.00	61.00
February	30.37	30.75	23.50	28.75	49.50	57.00	84.00	86.25	71.00	60.00
March	28.50	26.00	29.00	32.75	48.50	49.25	79.50	59.20	63.69	53.20
AVERAGE	35.28	35.36	23.89	24.88	45.87	48.34	70.29	74.67	73.13	68.81

Source : Calcutta Price Bulletin.

APPENDIX XVI—contd.

CALCUTTA MARKET—contd.

Month	1956-57		1957-58		1958-59		1959-60		1960-61	
	Cuddapah quality	Erode quality	Cuddapah quality	Erode quality	Cuddapah quality	Erode quality	Cuddapah quality	Erode quality	Cuddapah quality	Erode quality
April	57.50	52.00	26.00	24.62	21.00	23.00	33.50	35.50	..	41.80
May	56.00	43.37	24.40	22.40	20.50	22.00	33.40	36.00	..	42.00
June	49.00	38.39	21.00	20.75	22.38	23.50	32.75	35.00	..	40.50
July	37.25	34.00	20.00	20.00	24.00	23.50	33.20	37.00	..	43.20
August	36.37	34.50	20.00	19.10	..	24.00	34.63	38.50	..	46.00
September	36.00	30.87	18.50	18.75	..	25.50	36.25	39.75	..	46.20
October	32.00	28.25	18.00	18.87	..	25.00	44.67	47.40	..	47.25
November	29.00	27.20	20.40	22.60	..	24.87	44.37	48.00	..	47.25
December	28.00	29.00	25.50	20.00	22.50	25.00	42.12	46.00	..	47.00
January	27.50	24.75	24.40	19.10	22.50	24.80	42.00	48.20	..	47.40
February	27.00	27.12	20.67	18.37	29.00	32.50	40.25	45.75	..	47.40
March	26.19	27.47	19.00	19.75	28.75	33.75	37.12	43.00	..	47.40
AVERAGE	36.82	33.08	21.49	20.36	23.83	25.62	37.85	41.67	..	45.18

Source : Calcutta Price Bulletin.

APPENDIX XVI—contd.

AMRITSAR MARKET

Month	1951-52	1952-53	1953-54	1954-55	1955-56	1956-57	1957-58	1958-59	1959-60	1960-61
April
May
June
July
August
September
October
November
December
January
February
March
AVERAGE

Source : Punjab Price Bulletin.

APPENDIX XVI—contd.

CUTTACK MARKET (*Berhampuri quality*)

Month	1951-52	1952-53	1953-54	1954-55	1955-56	1956-57	1957-58	1958-59	1959-60	1960-61
April	51.50	24.00	25.00	51.00	86.00	48.00	27.44	19.06	28.56	35.78
May	51.00	27.37	34.00	51.50	90.00	45.75	23.62	19.06	28.19	37.32
June	52.00	27.37	36.00	52.00	85.00	39.62	24.37	21.31	28.28	38.00
July	46.00	23.50	45.00	57.00	87.50	38.50	22.06	20.73	27.44	39.62
August	41.00	23.50	45.00	87.50	60.94	35.00	21.31	20.44	28.94	41.12
September	41.00	23.50	42.00	96.50	60.94	35.00	18.28	19.92	34.31	41.00
October	41.00	23.50	42.00	99.00	60.94	32.75	18.28	19.06	31.25	39.94
November	36.25	23.50	42.00	94.00	60.94	36.00	21.31	19.06	33.50	37.04
December	35.75	24.00	44.00	80.00	60.94	29.00	19.23	18.31	32.00	37.88
January	34.43	24.00	45.00	80.00	60.94	33.50	18.21	17.56	33.50	38.07
February	31.93	24.00	45.00	76.00	60.94	32.56	17.70	28.94	36.12	38.07
March	29.00	22.00	48.00	76.00	60.94	33.50	17.70	28.94	34.25	36.20
AVERAGE	40.90	24.19	41.09	75.00	69.67	36.60	20.79	21.03	31.36	38.34

Source : Monthly Price Bulletin, Orissa.

APPENDIX XVI—concl'd.

TIRUCHIRAPALLI MARKET

Month	1956-57		1957-58		1958-59		1959-60		1960-61	
	Fingers	Bulbs	Fingers	Bulbs	Fingers	Bulbs	Fingers	Bulbs	Fingers	Bulbs
April	38.56	32.10	24.44	18.03	20.56	13.12	33.00	16.46	32.91	29.62
May	36.09	29.53	14.81	12.31	19.75	..	33.00	16.49	32.33	26.45
June	30.57	24.69	15.63	12.31	18.87	13.12	33.00	16.46	33.74	27.98
July	28.97	19.69	12.31	10.24	20.13	16.44	37.09	16.46	43.77	39.50
August	25.85	22.94	11.50	9.87	19.75	16.44	42.03	..	41.14	37.03
September	23.81	18.00	12.31	10.69	20.16	15.91	42.87	..	50.37	59.25
October	19.75	17.44	12.31	9.87	17.90	..	..	..	47.06	52.38
November	19.00	15.18	13.12	10.27	19.94	..	..	..	41.67	46.12
December	18.03	14.31	14.78	9.87	20.50	10.50	..	..	41.22	46.12
January	17.28	11.56	13.96	9.87	23.87	12.31	38.57	38.72	40.50	39.56
February	20.56	18.06	14.78	..	28.59	15.86	40.77	30.86	40.50	39.56
March	19.47	18.50	16.44	..	27.56	16.98	41.14	30.86	41.12	39.56
AVERAGE	24.83	20.17	14.70	11.33	21.47	14.52	37.94	23.76	40.53	40.26

Source : Assistant Marketing Officer, Tiruchirapalli.

APPENDIX XVII

Average monthly spot prices of turmeric (Madras finger quality) at London during the period from 1951-52 to 1960-61

(Price in sh. d. per cwt.)

Month		1951-52	1952-53	1953-54	1954-55	1955-56	1956-57	1957-58	1958-59	1959-60	1960-61
		sh. d.	sh. d.	sh. d.	sh. d.	sh. d.	sh. d.	sh. d.	sh. d.	sh. d.	sh. d.
April	.	104 0	66 3	75 0	156 8	N.A.	145 0	77 6	55 10	83 0	104 0
May	.	107 6	65 0	86 10	157 0	182 6	140 0	77 6	56 10	84 4	102 6
June	.	104 0	64 5	94 1	154 0	170 8	98 6	67 6	57 6	82 6	100 8
July	.	100 0	60 0	101 3	137 0	158 2	87 6	62 6	60 0	95 0	105 0
August	.	95 0	60 0	105 3	133 4	158 9	90 8	56 8	62 6	103 9	105 0
September	.	95 0	60 0	N.A.	161 0	160 10	87 6	52 6	62 6	107 6	103 9
October	.	90 0	60 8	N.A.	196 3	161 10	80 10	52 6	61 10	109 0	102 6
November	.	90 0	60 0	130 0	210 0	160 0	83 9	52 6	62 6	111 10	102 6
December	.	85 0	60 0	130 0	230 0	159 2	80 0	55 0	62 6	112 6	102 6
January	.	81 10	62 6	130 0	230 0	155 0	82 6	55 0	60 6	116 0	102 6
February	.	75 10	65 0	130 0	N.A.	155 0	82 6	50 8	86 3	112 6	105 0
March	.	75 10	68 9	130 0	N.A.	145 0	78 2	51 6	85 0	106 3	107 6
AVERAGE		91 10	62 9	111 3	176 4	160 8	94 9	59 3	64 6	102 0	103 7

Source : Public Ledger, London.

Comparison of annual wholesale prices of turmeric in assembling and distributing markets

(Rupees per standard maund)

169

APPENDIX XIX

Comparison of spot and futures prices of turmeric at Sangli market (October 1957 to September 1961)

[Price in Rupees per maund of Rajapuri (Basis variety)]

Month	Spot prices	Futures prices					
		Margashirsh contract		Vaishakh contract		Ashwin contract	
		Futures price	Spread between spot and futures prices	Futures price	Spread between spot and futures prices	Futures price	Spread between spot and futures prices
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
October 1957	Rs. P. 18.33	Rs. P. 18.76	Rs. P. 0.43	Rs. P. ..	Rs. P. ..	Rs. P. ..	Rs. P. ..
November 1957	Rs. P. 20.20	Rs. P. 20.24	Rs. P. 0.04	Rs. P. 21.15	Rs. P. 0.95	Rs. P. ..	Rs. P. ..
December 1957	Rs. P. 18.38	Rs. P. 18.00	Rs. P. 0.38	Rs. P. 19.82	Rs. P. 1.44	Rs. P. ..	Rs. P. ..
January 1958	Rs. P. 17.40	Rs. P. ..	Rs. P. ..	Rs. P. 19.08	Rs. P. 1.68	Rs. P. ..	Rs. P. ..
February 1958	Rs. P. 17.38	Rs. P. ..	Rs. P. ..	Rs. P. 18.74	Rs. P. 1.36	Rs. P. ..	Rs. P. ..
March 1958	Rs. P. 20.60	Rs. P. ..	Rs. P. ..	Rs. P. 21.68	Rs. P. 1.08	Rs. P. 24.13	Rs. P. 3.53
April 1958	Rs. P. 21.58	Rs. P. ..	Rs. P. ..	Rs. P. 21.90	Rs. P. 0.32	Rs. P. 24.61	Rs. P. 3.03
May 1958	Rs. P. 19.80	Rs. P. ..	Rs. P. ..	Rs. P. 21.15	Rs. P. 1.35	Rs. P. 22.96	Rs. P. 3.16
June 1958	Rs. P. 22.48	Rs. P. ..	Rs. P. ..	Rs. P. ..	Rs. P. ..	Rs. P. 24.95	Rs. P. 2.47
July 1958	Rs. P. 26.05	Rs. P. ..	Rs. P. ..	Rs. P. ..	Rs. P. ..	Rs. P. 26.32	Rs. P. 0.27
August 1958	Rs. P. 23.10	Rs. P. ..	Rs. P. ..	Rs. P. ..	Rs. P. ..	Rs. P. 26.28	Rs. P. 3.18

APPENDIX XIX—contd.

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Rs. P.	Rs. P.	Rs. P.	Rs. P.	Rs. P.	Rs. P.	Rs. P.
			S.Y. 2015			S.Y. 2014	
September 1958	26.19	29.02	2.83	..	..	29.24	3.05
October 1958	26.33	28.80	2.47	..	..	29.84	3.51
November 1958	24.20	26.25	2.05	..	..	..	..
December 1958	22.19	24.15	1.96	..	..	..	..
January 1959 to July 1959							
			No trading in futures during this period (Vaishakh S.Y. 2015 and Ashwin S.Y. 2015)				
			S.Y. 2016				
August 1959	31.08	33.58	2.50	..	..	..	..
September 1959	31.34	35.42	4.08	..	..	..	..
October 1959	33.65	38.15	4.50	..	..	..	..
			S.Y. 2016				
November 1959	33.69	33.63	0.06	35.38	1.69	..	..
December 1959	33.25	32.50	0.75	35.08	1.83	..	..
January 1960	34.58	..	..	36.95	2.37	..	..
February 1960	35.64	..	..	37.78	2.14	..	..
						S.Y. 2016	
March 1960	33.70	..	..	34.83	1.13	37.71	4.01
April 1960	33.63	..	..	34.49	0.86	37.41	3.78
May 1960	35.30	..	..	36.39	1.09	38.45	3.15
June 1960	35.18	..	..	..	..	37.71	2.53
July 1960	37.65	..	..	..	..	39.47	1.82

APPENDIX XIX—concl'd.

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Rs. P.	Rs. P.	Rs. P.	Rs. P.	Rs. P.	Rs. P.	Rs. P.
			S.Y. 2017				
August 1960	36.65	38.54	1.89	..	..	37.94	1.29
September 1960	35.93	37.65	1.72	..	..	36.49	0.56
October 1960	32.75	32.83	0.08	..	..	..	..
					S.Y. 2017		
November 1960	32.80	32.57	0.23	34.62	1.82	..	..
December 1960	33.33	33.87	0.54	35.17	1.84	..	..
January 1961	32.20	..	..	33.60	1.40	..	..
February 1961	31.83	..	..	32.50	0.67	..	..
						S.Y. 2017	
March 1961	33.99	..	..	35.85	1.86	37.71	3.72
April 1961	35.76	..	..	36.82	1.06	38.31	2.55
May 1961	36.76	..	..	37.23	0.47	38.94	2.18
June 1961	40.61	..	..	..	..	41.21	0.60
July 1961	41.65	..	..	..	..	41.18	0.47
August 1961	42.06	..	..	..	..	41.96	0.10
September 1961	41.90	..	..	..	..	42.00	0.10

APPENDIX XX

Rates of ordinary and special margins of deposit payable by members dealing in Forward Contract for turmeric during the seasons Samvat Years 2014, 2015 and 2016

Ordinary Margins

(Payable on the highest net open position in respect of Hedge Contracts during any clearing week)

(1 Atki = 2½ standard maunds)

Season	Rate of ordinary margin
S.Y. 2014 & S.Y. 2015	<p>On the first 1,500 Atkis at the rate of Rs. nil per Atki.</p> <p>On the next 2,500 Atkis at the rate of Re. 1 per Atki.</p> <p>On the next 2,500 Atkis at the rate of Rs. 2 per Atki.</p> <p>On the next 2,500 Atkis at the rate of Rs. 3 per Atki.</p> <p>On the next 5,000 Atkis at the rate of Rs. 5 per Atki.</p> <p>Above 14,000 Atkis at the rate of Rs. 7.50 per Atki.</p>
S.Y. 2016	<p>On the first 1,500 Atkis at the rate of Rs. nil per Atki.</p> <p>On the next 1,500 Atkis at the rate of Re. 1 per Atki.</p> <p>On the next 2,000 Atkis at the rate of Rs. 2 per Atki.</p> <p>On the next 2,000 Atkis at the rate of Rs. 3 per Atki.</p> <p>On the next 3,000 Atkis at the rate of Rs. 5 per Atki.</p> <p>On the next 5,000 Atkis at the rate of Rs. 7 per Atki.</p>

APPENDIX XX—contd.

Special Margins

Contract	Closing rate	Rate of deposit per Atki	When payable
Margashirsh S.Y. 2014	Rs. 50 or below Rs. 45 or below Rs. 40 or below	Re. 1 Rs. 5 (Re. 1 as above + Rs. 4) Rs. 10 (Rs. 5 as above + Rs. 5)	Payable by members on their "net short open position" if the closing forward rates of the contract are quoted at Rs. 50 per Atki or below.
Vaishakh S.Y. 2014	Rs. 50 or below Rs. 45 or below Rs. 40 or below	Re. 1 Rs. 5 (Re. 1 as above + Rs. 4) Rs. 10 (Rs. 5 as above + Rs. 5)	Payable when the closing rate of the contract would stand at or below Rs. 45 per Atki.
Ashwin S.Y. 2014	Rs. 50 or below Rs. 45 or below Rs. 40 or below	Flat rate of Rs. 15 per Atki	Upto 12-10-1958, as stated above. From 12-10-1958 onwards payable on the total net open position of the members and also of their clients, when the closing rates of the contract would be quoted above Rs. 75.50 per Atki.
Margashirsh S.Y. 2015	Rs. 50 or below Rs. 45 or below Rs. 40 or below Rs. 75 or above Rs. 80 or above Rs. 85 or above	Rs. 3 Rs. 6 (Rs. 3 as above + Rs. 3) Rs. 10 (Rs. 6 as above + Rs. 4) Rs. 3 Rs. 6 (Rs. 3 as above + Rs. 3) Rs. 10 (Rs. 6 as above + Rs. 4)	Payable on total net open short or long position on the account of the members as well as on the account of each of their clients as and when the forward rates of the contract reached the limit specified here.
Margashirsh S.Y. 2016	Rs. 105 or above Rs. 110 or above Rs. 115 or above Rs. 75 or below Rs. 70 or below Rs. 65 or below	Rs. 5 Rs. 10 (Rs. 5 as above + Rs. 5) Rs. 20 (Rs. 10 as above + Rs. 10) Rs. 5 Rs. 10 (Rs. 5 as above + Rs. 5) Rs. 20 (Rs. 10 as above + Rs. 10)	Ditto.
Vaishakh S.Y. 2016	Rs. 105 or above Rs. 110 or above Rs. 115 or above Rs. 75 or below Rs. 70 or below Rs. 65 or below	Rs. 5 (1st marginal line) Rs. 10 (2nd marginal line) Rs. 20 (3rd marginal line) Rs. 5 (1st marginal line) Rs. 10 (2nd marginal line) Rs. 20 (3rd marginal line)	Ditto. Free limit of 300 Atkis in case of members holding a total open position not exceeding 500 Atkis was allowed. Members paying special margins were required to pay their due ordinary margins also.

APPENDIX XXI

Results of analysis of commercial samples of turmeric fingers, bulbs (unpolished and polished) and powder

Sample No.	Moisture content percentage	Total ash percentage	Ash insoluble in Hcl percentage	Crude fibre percentage	Curcumin dye percentage	Length (c.m.)	Thickness (c.m.)	Natural Test weight (No. per 100 gms.)
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
<i>A. Fingers—unpolished</i>								
1	12·61	7·25	0·823	3·577	1·7	3·48	0·76	54
2	9·90	6·60	0·775	3·642	1·2	3·75	0·85	40
9	9·20	6·33	0·736	..	1·8	3·47	1·54	20
12	8·09	6·55	0·825	..	1·8	4·32	1·07	25
13	8·35	6·65	0·227	..	2·3	5·19	1·08	15
14	9·60	7·57	1·361	3·243	2·2	4·93	1·02	22
15	7·86	5·99	0·364	..	2·1	5·78	0·97	24
16	9·25	6·74	0·373	3·508	2·3	4·93	1·06	21
18	9·70	5·25	0·511	2·768	1·9	4·84	0·88	31
19	9·68	7·70	0·125	..	2·1	3·80	1·20	20
35	9·18	6·11	0·356	..	1·9	4·69	1·02	24
37	9·79	6·30	0·267	..	2·1	4·99	0·92	47
43	9·21	6·01	0·249	..	2·1	5·28	1·17	28
44	9·81	5·74	0·139	2·739	2·4	4·15	1·20	20
49	9·01	7·91	0·160	..	1·2	5·89	1·07	17
50	9·82	7·76	0·160	3·032	2·4	5·68	1·01	14
51	9·99	7·38	0·269	..	2·1	6·55	1·22	13
52	11·39	6·33	0·153	2·918	1·8	4·85	1·23	19
53	10·80	6·41	0·539	..	1·9	4·40	1·26	18
117	13·04	6·52	0·325	..	2·6	3·97	1·00	47
118	14·17	5·48	0·315	..	1·9	3·95	1·16	31
119	14·69	5·79	0·409	..	2·0	4·73	1·10	20
124	13·71	5·74	0·300	..	2·4	4·50	0·90	41
126	11·49	5·61	0·426	..	3·6	4·17	0·82	56
128	11·37	7·76	0·164	..	1·8	4·27	0·78	64
133	11·43	7·67	0·270	..	2·0	6·48	0·96	23
134	11·43	7·67	0·312	..	2·1	4·55	0·96	39
135	10·01	6·86	0·102	..	2·0	3·45	0·54	60
137	10·12	5·72	0·091	..	2·3	7·32	1·08	16

APPENDIX XXI—*contd.*

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
<i>B. Fingers—polished</i>								
4	9.45	6.88	0.968	2.728	1.9	3.65	1.13	30
7	9.99	6.23	0.202	..	2.1	4.56	1.25	15
10	8.80	7.39	0.394	2.669	1.9	4.08	1.06	26
17	9.24	6.16	0.364	..	1.6	4.02	1.02	38
23	10.24	6.16	0.690	..	1.8	3.60	0.73	51
26	11.92	4.79	0.387	2.693	2.1	2.90	0.90	49
27	12.24	6.27	0.353	..	2.3	2.43	0.90	53
30	9.90	7.17	0.784	2.685	1.8	3.80	1.00	44
32	10.63	7.38	0.209	3.443	1.9	3.83	0.93	55
34	10.56	5.35	0.146	3.574	2.0	5.16	1.18	20
38	10.58	5.92	0.348	3.116	1.3	4.23	0.92	32
45	9.83	6.34	0.203	..	2.3	3.52	1.05	24
47	11.15	7.21	0.137	..	1.7	3.98	1.13	23
56	10.00	7.92	0.244	2.204	2.4	4.16	1.00	38
57	9.84	9.25	0.816	..	1.9	2.97	0.87	61
58	9.99	9.10	0.521	3.730	1.6	3.05	0.88	50
60	11.21	6.53	0.104	3.098	1.5	4.33	1.11	21
61	10.54	8.34	0.660	..	1.3	5.45	1.07	19
62	11.16	7.78	0.672	2.486	2.4	3.98	1.15	33
64	10.99	7.75	0.644	2.586	2.1	4.33	1.25	19
66	10.77	6.22	0.620	2.830	1.9	4.39	1.30	17
69	10.30	5.73	0.261	..	2.4	3.75	1.22	24
71	10.40	5.41	0.521	..	1.3	4.19	1.13	23
73	10.30	6.85	0.734	..	1.9	5.13	1.06	20
75	9.90	5.35	0.451	..	1.8	4.85	0.90	33
79	10.47	4.98	0.512	..	1.9	4.07	1.27	19
81	10.65	4.63	0.200	..	1.5	3.79	1.08	36
84	10.67	6.06	0.131	2.372	2.1	3.65	1.04	29
87	12.82	5.32	0.673	..	3.0	4.30	0.87	34
88	13.05	9.13	0.343	3.072	3.0	4.45	0.84	35
91	10.83	5.80	0.673	..	1.7	4.40	0.85	40
92	13.34	5.47	0.336	2.453	1.6	4.35	0.83	27
94	13.81	5.44	0.290	2.798	2.0	4.40	0.90	42
95	10.28	6.16	1.716	..	2.0	4.04	0.88	41
100	12.03	6.56	0.215	2.362	1.7	5.55	1.41	20
102	11.05	5.55	0.693	..	2.1	6.14	1.28	11
104	11.82	6.82	0.685	..	1.5	6.10	1.23	17
106	12.09	7.02	0.143	..	1.7	4.82	1.08	20
109	12.90	6.63	0.169	..	2.5	5.85	1.39	11
111	10.52	8.24	0.203	..	1.7	3.73	0.92	48
114	10.35	7.44	0.463	..	2.4	4.09	0.89	49
115	11.48	6.74	0.263	..	2.3	4.23	0.99	36
121	12.11	5.74	0.325	..	2.0	3.53	1.26	31
131	10.23	7.25	0.297	..	2.1	4.19	1.32	27

APPENDIX XXI—*contd.*

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
<i>C. Bulbs—unpolished</i>								
3	12·63	5·10	0·881	..	1·4	3·37	1·94	11
20	8·07	9·78	0·359	2·888	1·9	3·68	1·75	25
120	13·12	4·60	0·172	..	2·0	3·17	1·97	16
122	10·98	5·58	1·050	..	2·0	3·15	2·27	9
129	11·51	9·82	1·040	..	1·9	2·85	1·51	28
136	9·84	12·19	0·961	..	1·8	3·42	1·52	29
<i>D. Bulbs—polished</i>								
6	8·06	4·53	0·608	2·880	1·8	3·34	1·78	16
8	10·59	4·47	1·150	3·454	1·7	4·14	2·19	6
11	8·89	6·53	0·769	..	2·3	2·93	1·49	21
21	10·00	5·55	0·429	..	2·1	3·66	2·31	9
24	11·00	7·15	0·355	2·354	1·7	3·67	0·96	37
36	10·19	3·69	0·412	2·297	1·6	4·37	2·30	5
39	10·58	4·81	0·747	..	1·6	3·44	2·24	15
67	11·85	4·71	0·677	..	1·2	3·71	2·18	10
72	11·20	4·09	1·477	2·724	1·5	3·38	2·31	10
80	10·05	5·15	0·495	2·517	2·0	3·30	2·05	15
83	11·98	5·43	0·812	..	2·0	4·21	1·50	13
90	11·93	3·94	0·690	2·927	1·4	4·15	1·88	10
93	11·95	5·98	1·179	..	2·8	3·74	1·95	18
96	11·60	3·69	0·817	2·653	1·6	3·66	1·76	10
99	11·89	3·78	0·212	..	1·8	4·04	2·32	6
101	11·39	5·28	0·882	..	2·1	4·25	2·59	6
103	12·53	5·70	1·020	..	2·3	5·49	2·59	5
105	10·91	7·62	2·717	..	1·6	3·56	2·06	10
107	11·93	5·68	1·182	..	2·3	3·71	2·06	8
108	11·70	4·61	0·573	..	2·2	3·93	2·28	7
112	10·22	6·06	0·975	..	1·9	2·33	1·58	23
<i>E. Powder</i>								
5	12·59	6·58	0·902	..	1·6	..	..	..
22	9·45	3·79	0·285	3·360	2·3	..	..	..
25	10·80	5·70	0·255	..	1·6	..	..	..
28	10·20	7·47	0·937	..	1·6	..	..	..
29	10·88	7·57	1·804	..	1·7	..	..	..
33	9·59	6·61	0·256	..	2·1	..	..	..
40	7·64	6·88	1·776	4·949	1·3	..	..	..
41	7·44	6·75	0·500	..	1·9	..	..	..
42	9·41	4·43	0·200	2·803	1·6	..	..	..
48	11·64	10·69	0·482	3·622	1·1	..	..	..
54	11·69	8·77	0·443	3·390	2·3	..	..	..
59	11·35	5·87	0·488	..	1·3	..	..	..
63	10·96	8·78	0·206	..	2·4	..	..	..

APPENDIX XXI—*concl'd.*

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
65	10·76	6·40	0·524	..	1·7	..	..	..
68	10·99	6·20	0·759	2·938	2·1	..	..	..
74	9·74	7·45	0·137	2·344	2·5	..	..	..
76	10·11	4·80	0·218	2·996	1·9	..	..	..
78	9·05	6·20	0·359	3·253	2·5	..	..	..
82	11·79	6·99	0·400	3·318	1·5	..	..	..
85	11·81	7·38	0·638	..	1·7	..	..	..
86	10·21	5·80	1·361	3·050	2·2	..	..	..
89	11·33	5·90	0·893	..	2·1	..	..	..
97	8·81	5·62	0·848	..	1·7	..	..	..
98	10·18	6·82	0·227	2·057	1·7	..	..	..
110	12·49	7·04	0·307	..	2·5	..	..	..
113	9·73	6·89	0·523	..	1·5	..	..	..
116	13·27	6·79	0·539	..	2·3	..	..	..
123	11·39	6·06	0·296	..	2·4	..	..	..
130	13·05	13·30	1·251	..	2·0	..	..	..
132	9·24	7·67	0·341	..	2·3	..	..	..

NOTE.—Almost all the samples analysed gave negative results in respect of the presence of added lead, chromate colours and coal-tar dyes. Only two samples of turmeric powder (T-28 and T-29) were found positive in respect of added lead and chromate colour.

APPENDIX XXII

Range of variation in the quality characteristics of commercial samples of turmeric analysed

Quality characteristics	Fingers unpo- lished	Fingers polished	Bulbs unpo- lished	Bulbs polished	Powder
Moisture content percentage .	8.09 to 14.69	8.80 to 13.81	8.07 to 13.12	8.06 to 12.53	7.44 to 13.27
Total ash percentage	5.25 to 7.91	4.63 to 9.25	4.60 to 12.19	3.69 to 7.62	3.79 to 13.30
Ash insoluble in Hcl percentage .	0.091 to 1.361	0.104 to 1.716	0.172 to 1.050	0.212 to 2.717	0.137 to 1.804
Crude fibre percentage	2.739 to 3.642	2.204 to 3.730	2.888	2.297 to 3.454	2.057 to 4.949
Curcumin dye percentage	1.2 to 3.6	1.3 to 3.0	1.4 to 2.0	1.2 to 2.8	1.1 to 2.5
Length (c.m.)	3.45 to 7.32	2.43 to 6.14	2.85 to 3.68	2.33 to 5.49	....
Thickness (c.m.)	0.54 to 1.54	0.73 to 1.39	1.51 to 2.27	0.96 to 2.59	....
Natural test weight (No. per 100 gms.)	13 to 64	11 to 55	9 to 29	5 to 37	....

APPENDIX XXIII

Provisional standard grades and grade designation marks and definition of quality for Indian turmeric

Grade designation (1)	Special characteristics		General characteristics (4)
	Length (2)	Core colour (3)	

Grade designation and definition of quality of Indian unpolished finger turmeric

FLY	Above 5 c.m.	Lemon yellow to bright yellow.	Unpolished finger turmeric shall be the cured and dried rhizomes of the plant <i>Curcuma longa</i> from which rootlets and scales have been removed. These shall be free from damage by insect pests, from lead chromate, and other artificial colouring matter and shall not contain more than 2.5 parts per million of lead. These shall not contain extraneous matter exceeding 2%.
FLO	Do.	Orange to light red.	
FLR	Do.	Deep red to brown.	
FSY	Above 3 c.m. but below 5 c.m.	Lemon yellow to bright yellow.	
FSO	Do.	Orange to light red	
FSR	Do.	Deep red to brown	

These shall conform to the following standards: the characteristic boric acid test shall be positive, total ash shall not be more than 7%, ash insoluble in Hcl shall not exceed 1.5% and the moisture content shall not exceed 10%. These shall not contain more than 5% by weight of bulbs.

A tolerance of 5% in respect of the length of the fingers may be allowed for each grade.

Grade designation and definition of quality of Indian polished finger turmeric

FLY	Above 5 c.m.	Lemon yellow to bright yellow.	Polished finger turmeric shall be the cured and dried rhizomes of the plant <i>Curcuma longa</i> from which rootlets, scales and a portion of epidermis have been removed. These shall be free from damage by insect pests, from lead chromate, and other artificial colouring matter and shall not contain more than 2.5 parts per million of lead. These shall not contain extraneous matter exceeding 2%.
FLO	Do.	Orange to light red.	
FLR	Do.	Deep red to brown	
FSY	Above 3 c.m. but below 5 c.m.	Lemon yellow to bright yellow.	
FSO	Do.	Orange to light red	
FSR	Do.	Deep red to brown	

APPENDIX XXIII—*contd.*

(1)	(2)	(3)	(4)
			These shall conform to the following standards : the characteristic boric acid test shall be positive, total ash shall not be more than 7%, ash insoluble in Hcl shall not exceed 1.5% and the moisture content shall not exceed 10%. These shall not contain more than 5% by weight of bulbs.
			A tolerance of 5% in respect of the length of the fingers may be allowed for each grade.

Grade designation and definition of quality of Indian unpolished bulb turmeric

BBY	Above 3.5 c.m.	Lemon yellow to bright yellow.	Unpolished bulb turmeric shall be the cured and dried rhizomes of the plant <i>Curcuma longa</i> from which rootlets and scales have been removed. These shall be free from damage by insect pests, from lead chromate, and other artificial colouring matter and shall not contain more than 2.5 parts per million of lead. These shall not contain extraneous matter exceeding 2%.
BBO	Do.	Orange to light red .	
BBR	Do.	Deep red to brown .	
BSY .	Above 2.5 c.m. but below 3.5 c.m.	Lemon yellow to bright yellow.	
BSO	Do.	Orange to light red.	
BSR .	Do.	Deep red to brown .	

These shall conform to the following standards : the characteristic boric acid test shall be positive, total ash shall not be more than 7%, ash insoluble in Hcl shall not exceed 1.5% and the moisture content shall not exceed 10%.

A tolerance of 5% in respect of the length of the bulbs may be allowed for each grade.

Grade designation and definition of quality of Indian polished bulb turmeric

BBY .	Above 3.5 c.m.	Lemon yellow to bright yellow.	Polished bulb turmeric shall be the cured and dried rhizomes of the plant <i>Curcuma longa</i> from which rootlets, scales and a portion of epidermis have been removed. These shall be free from damage by insect pests, from lead chromate, and other artificial colouring matter and shall not contain more than 2.5 parts per million of lead. These shall not contain extraneous matter exceeding 2%.
BBO	Do.	Orange to light red	
BBR	Do.	Deep red to brown .	
BSY .	Above 2.5 c.m. but below 3.5 c.m.	Lemon yellow to bright yellow.	
BSO	Do.	Orange to light red.	
BSR .	Do.	Deep red to brown.	

APPENDIX XXIII—concl'd.

(1)	(2)	(3)	(4)
			<p>These shall conform to the following standards : the characteristic boric acid test shall be positive, total ash shall not be more than 7%, ash insoluble in Hcl shall not exceed 1.5% and the moisture content shall not exceed 10%.</p> <p>A tolerance of 5% in respect of the length of the bulbs may be allowed for each grade.</p>
<i>Grade designation and definition of quality of Indian turmeric powder</i>			
PTY	.	Lemon yellow to bright yellow.	Indian turmeric powder shall be the ground powder of the plant <i>Curcuma longa</i> . It shall be free from dirt, mould growth and insect infestation. It shall be free from lead chromate and other artificial colouring matter and shall not contain more than 2.5 parts per million of lead.
PTO	.	Orange to light red	<p>It shall conform to the following standards: the characteristic boric acid test shall be positive, total ash shall not be more than 7%, ash insoluble in Hcl shall not exceed 1.5% and the moisture content shall not exceed 10%.</p> <p>It shall be of such fineness that when passed through a sieve of 1/100 mesh, nothing is retained upon the sieve.</p>

APPENDIX XXIV

Percentage of marketable surplus of turmeric sold in the villages and that taken to assembling markets for sale by growers in different producing areas (1960-61)

											Per- centage sold in villages	Per- centage taken to assemb- ling mar- kets for sale
I. Andhra Pradesh												
Duggirala	.	.	.	.	.	.	.	.	.	.	100	..
Kothapettah	.	.	.	.	.	.	.	.	.	.	100	..
Cuddapah	.	.	.	.	.	.	.	.	.	.	10	90
Nizamabad	.	.	.	.	.	.	.	.	.	.	25	75
State average											65	35
II. Maharashtra												
Sangli	.	.	.	.	.	.	.	.	.	.	3	97
Karad	.	.	.	.	.	.	.	.	.	.	5	95
Tasgaon	.	.	.	.	.	.	.	.	.	.	5	95
Takari	.	.	.	.	.	.	.	.	.	.	..	100
State average											5	95
III. Orissa												
Parlekimedi	.	.	.	.	.	.	.	.	.	.	95	5
Tikkabali	.	.	.	.	.	.	.	.	.	.	75	25
Udaigiri	.	.	.	.	.	.	.	.	.	.	85	15
State average											90	10
IV. Madras												
Erode	.	.	.	.	.	.	.	.	.	.	..	100
Salem	.	.	.	.	.	.	.	.	.	.	10	90
Karur	.	.	.	.	.	.	.	.	.	.	..	100
State average											1	99
V. Kerala												
Calicut	.	.	.	.	.	.	.	.	.	.	25	75
Alleppey	.	.	.	.	.	.	.	.	.	.	85	15
Cochin	.	.	.	.	.	.	.	.	.	.	85	15
State average											60	40
VI. ALL-INDIA AVERAGE											43.6	56.4

APPENDIX XXV

List of important assembling markets for turmeric in India and the quantities handled (1960-61)

Markets	Regulated/Non-regulated	Average annual arrivals (maunds of cured turmeric)
Andhra Pradesh		
1. Duggirala	Regulated	2,40,000
2. Cuddapah	Do.	2,25,000
3. Vijayawada	Do.	85,000
4. Rovulapalam	Non-regulated	68,000
5. Nizamabad	Regulated	56,000
6. Kodur	Do.	34,000
7. Tenali	Do.	25,000
Maharashtra		
8. Sangli	Regulated	3,12,000
9. Karad	Do.	75,000
10. Tasgaon	Do.	16,000
11. Takari	Do.	10,000
Orissa		
12. Berhampur	Non-regulated	1,00,000
13. Parlekimedi	Do.	18,000
14. Tikkabali	Regulated	6,000
15. G. Udaigiri	Do.	5,000
Madras		
16. Erode	Non-regulated	1,75,000
17. Salem	Do.	20,000
18. Karur	Do.	18,000
Kerala		
19. Calicut	Non-regulated	18,000
20. Cochin	Do.	12,000
21. Alleppey	Do.	10,000

APPENDIX XXVI

Market charges payable by sellers and buyers in important assembling markets in India (1960-61)

ANDHRA PRADESH

I. *Nizamabad market (Regulated)* (Payable by sellers)

1. Commission	Rs. 1·50 per Rs. 100.
2. Hamali	Re. 0·09 per bag of 65 kg.
3. Dharmada	Re. 0·01 per bag of 65 kg.
4. Weighment	Re. 0·05 per bag of 65 kg.
5. Market Committee Cess	Re. 0·25 per Rs. 100.
6. Mazdoori	Re. 0·05 per bag of 65 kg.

II. *Cuddapah market (Regulated)* (Payable by sellers)

1. Commission	Rs. 4·00 per candy of 520 lbs.
2. First Madri	Rs. 1-4-0 per Rs. 100.
3. Second Madri	Re. 0-6-8 per Rs. 100.
4. Vaddi (interest)	Re. 0-10-0 per Rs. 100.
5. Weighment and handling	Re. 0-2-6 per bag of 156 lbs.
6. Rusum	Re. 0-1-6 per Rs. 100.
7. Charity	Re. 0-3-0 per Rs. 100.
8. Dalali (Brokerage)	Re. 0·25 per candy of 520 lbs.
9. Godown rent	Re. 0·25 per bag of 156 lbs.

(Payable by buyers)

1. Association fund	Re. 0·03 per bag of 156 lbs.
2. Market Committee cess	Re. 0·12 per candy of 500 lbs.
3. Handling charges	Re. 0·04 per bag of 156 lbs.

MAHARASHTRA STATE

III. *Sangli and Karad markets (Regulated)* (Payable by sellers)

1. Commission	Rs. 1·56 per Rs. 100.
2. Weighment	Re. 0·03 per bag of 2½ mds.
3. Hamali	Re. 0·12 per bag of 2½ mds.
4. Market Committee cess	Re. 0·06 per bag of 2½ mds.
5. Octroi	Re. 0·19 per bag of 2½ mds.

IV. *Tasgaon Market (Regulated)* (Payable by sellers)

1. Commission	Rs. 1·25 per Rs. 100.
2. Weighment	Re. 0·02 per bag of 2½ mds.
3. Hamali	Re. 0·09 per bag of 2½ mds.
4. Market Committee cess	Re. 0·06 per bag of 2½ mds.

APPENDIX XXVI—*contd.*

ORISSA STATE

V. *Tikkabali and Udaigiri markets (Regulated)*

(Payable by sellers)

1. Commission	Re. 1·00 per Rs. 100.
2. Weighment	Re. 0·06 per bag of 1½ std. mds.
3. Hamali	Re. 0·05 per bag of 1½ std. mds.
4. Market Committee cess	Re. 0·50 per Rs. 100.

VI. *Berhampur market (Non-regulated)*

(Payable by sellers)

1. Commission	Rs. 1·56 per Rs. 100.
2. Hamali	Re. 0·12 per bag of 2 std. mds.
3. Charity	Re. 0·01 per Rs. 100.
4. Rusum (Discount)	Re. 1·00 per Rs. 100.

(Payable by buyers)

1. Sorting	Re. 0·31 per bag of 2 std. mds.
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KERALA STATE

VII. *Calicut market (Non-regulated)*

(Payable by sellers)

1. Commission	Rs. 3·00 per Rs. 100.
2. Brokerage	Re. 0·25 per Rs. 100.
3. Weighment	Re. 0·32 per bag of 70 kgs.

VIII. *Cochin market (Non-regulated)*

(Payable by sellers)

Commission	Rs. 12·00 per candy of 6 cwts.
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(Payable by buyers)

Brokerage	Re. 0·75 per candy of 6 cwts.
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IX. *Alleppey market (Non-regulated)*

(Payable by sellers)

Commission	Rs. 11·00 per candy of 6 cwts.
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MADRAS STATE

X. *Erode Market (Non-regulated)*

(Payable by sellers)

	Through commission agents	Through co-operative societies
1. Commission	Rs. 6·25 per Rs. 100.	5 percent
2. Weighment (per bag of 140 lbs.)	Re. 0·48	Re. 0·31
3. Allowances (per bag of 140 lbs.)	1·75 lbs.	1·75 lbs.

(Payable by buyers)

1. Association fund (per bag of 140 lbs.)	Re. 0·03	Nil
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APPENDIX XXVI—*contd.*XI. *Karur Market (Non-regulated)*

(Payable by sellers)	Through commission agents	Through co-operative societies
1. Commission (per bag of 140 lbs.) . . .	Rs. 1·25	Nil
2. Godown charges (per bag of 140 lbs.) . .	Nil	Re. 0·06
3. Insurance	Nil	Re. 0·05 per Rs. 100.
(Payable by buyers)		
1. Commission (per bag of 140 lbs.) . . .	Nil	Re. 1·00
2. Handling and weighment (per bag of 140 lbs.)	Re. 0·62	Nil
3. Brokerage (per bag of 140 lbs.) . . .	Re. 0·25	Nil

XII. *Salem market (Non-regulated)*

(Payable by sellers)		
1. Commission	Rs. 2·50 per Rs. 100.	
2. Weighment and handling (per bag of 140 lbs.) .	Re. 0·19	
(Payable by buyers)		
1. Weighment and handling (per bag of 140 lbs.) .	Re. 0·12	

APPENDIX XXVII

Comparison of market charges payable by sellers and buyers for Rs. 100 worth of turmeric in selected assembling markets in India (1960-61)

	ANDHRA PRADESH						MAHARASHTRA					
	Nizamabad (Regulated)			Cuddapah (Regulated)			Sangli and Karad (Regulated)			Tasgaon (Regulated)		
	Sellers	Buyers	Total	Sellers	Buyers	Total	Sellers	Buyers	Total	Sellers	Buyers	Total
1. Commission	Rs. P.	Rs. P.	Rs. P.	Rs. P.	Rs. P.	Rs. P.	Rs. P.	Rs. P.	Rs. P.	Rs. P.	Rs. P.	Rs. P.
	1.50	..	1.50	2.00	..	2.00	1.56	..	1.56	1.25	..	1.25
2. Weighment and handling	0.47	..	0.47	0.28	0.07	0.35	0.23	..	0.23	0.16	..	0.16
3. Brokerage	..	..	..	0.13	..	0.13	..	..	..	..	..	..
4. Customary allowances	..	..	..	1.67	..	1.67	..	..	..	..	..	..
5. Market Committee cess	0.25	..	0.25	..	0.06	0.06	0.09	..	0.09	0.09	..	0.09
6. Charity, etc.	0.03	..	0.03	0.19	0.05	0.24	..	..	..	..	..	..
7. Octroi	..	..	..	..	..	..	0.28	..	0.28	..	..	..
8. Others	..	..	..	1.15	..	1.15	..	..	..	..	..	..
TOTAL	2.25	..	2.25	5.42	0.18	5.60	2.16	..	2.16	1.50	..	1.50

APPENDIX XXVII—*contd.*

MADRAS STATE

		Erode (Non-regulated)						Karur (Non-regulated)						Salem (Non-regulated)			
		Through commission agents			Through co-operative societies			Through commission agents			Through co-operative societies						
		Sellers	Buyers	Total	Sellers	Buyers	Total	Sellers	Buyers	Total	Sellers	Buyers	Total	Sellers	Buyers	Total	
Rs. P.	Rs. P.	Rs. P.	Rs. P.	Rs. P.	Rs. P.	Rs. P.	Rs. P.	Rs. P.	Rs. P.	Rs. P.	Rs. P.	Rs. P.	Rs. P.	Rs. P.	Rs. P.	Rs. P.	Rs. P.
1. Commission	6.25	..	..	6.25	5.00	..	5.00	1.85	..	1.85	..	1.48	1.48	2.50	..	2.50	2.50
2. Weightment and handling	0.48	..	..	0.48	0.40	..	0.40	..	0.92	0.92	..	..	..	0.26	0.17	0.43	190
3. Brokerage	..	..	..	..	..	..	..	0.37	0.37	0.37	..	..	..	..	..	..	..
4. Customary allowances	1.25	..	..	1.25	1.25	..	1.25	..	..	..	..	..	..	..	..	..	..
5. Market com- mittee cess	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
6. Charity etc.	..	0.04	0.04	0.04	..	..	..	..	..	..	..	..	..	..	..	..	..
7. Octroi	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
8. Others	..	..	..	..	..	..	..	..	..	0.14	..	..	0.14	..	..	..	..
TOTAL	7.98	0.04	0.04	8.02	6.65	..	6.65	1.85	1.29	3.14	0.14	1.48	1.62	2.76	0.17	2.93	

APPENDIX XXVII—concl'd.

ORISSA STATE										KERALA STATE						
Tikabali & Udaigiri (Regulated)				Berhampur (Non-regulated)				Calicut (Non-regulated)			Cochin (Non-regulated)			Alleppey (Non-regulated)		
Sellers	Buyers	Total		Sellers	Buyers	Total		Sellers	Buyers	Total	Sellers	Buyers	Total	Sellers	Buyers	Total
Rs. P.	Rs. P.	Rs. P.		Rs. P.	Rs. P.	Rs. P.		Rs. P.	Rs. P.	Rs. P.	Rs. P.	Rs. P.	Rs. P.	Rs. P.	Rs. P.	Rs. P.
1. Commission	..	1.00		1.56	..	1.56		3.00	..	3.00	3.19	..	3.19	3.15	..	3.15
2. Weighment and handling	..	0.22		0.24	0.62	0.86		0.48	..	0.48	..	..	..	..	..	..
3. Brokerage		0.25	..	0.25	..	0.20	0.20	..	..	..
4. Customary allowances		1.00	..	1.00		..	..	..	..	..	..	..	..	..
5. Market Com- mittee cess	..	0.50		..	..	..		..	..	..	..	..	..	..	..	..
6. Charity etc..		0.01	..	0.01		..	..	..	..	..	..	..	..	..
7. Octroi
8. Others
TOTAL	1.72	..		1.72	2.81	0.62		3.73	..	3.73	3.19	0.20	3.39	3.15	..	3.15

APPENDIX XXVIII

Comparison of the volume of transaction in different Forward Contracts in turmeric and the quantities actually delivered against each of them during the years 1957-58 (S.Y. 2014) to 1959-60 (S.Y. 2016)

(Quantity in standard maunds)

	Contract	Volume of transactions		Quantity actually tendered	Percentage of the quantity tendered to total volume of transaction
		Total turnover	Average weekly turnover		
Margashirsh S. Y. 2014	.	1,119,125	65,830	4,250	0.4
Vaishakh S. Y. 2014	.	2,367,250	94,690	6,250	0.3
Ashwin S. Y. 2014	.	3,837,250	119,915	111,625	2.9
Margashirsh S.Y. 2015	.	2,624,000	138,063	9,125	0.3
Vaishakh S. Y. 2015	.		No futures trade.		
Ashwin S. Y. 2015	.		No futures trade.		
Margashirsh S. Y. 2016	.	3,292,640	169,062	13,798	0.1
Vaishakh S. Y. 2016	.	7,836,614	279,878	17,415	0.2
Ashwin S. Y. 2016	.	6,442,878	222,159	9,913	0.2

APPENDIX XXIX

Quantity of different qualities of turmeric delivered against different contracts during the years 1956-57 (S.Y. 2013) to 1959-60 (S.Y. 2016)
(Quantity in standard maunds)

	Tenders issued at			Quantity tendered under different qualities							
	Sangli	Karad	Total	Rajapuri	Cuddapah	Kodur	Nandyal	Nizam- abad	Duggirala	Salem	Total
Margashirsh S.Y. 2013	6,375	13,000	19,375	10,125	2,125	5,875	875	375	..	..	19,375
Vaishakh S.Y. 2013	7,125	2,125	9,250	7,625	..	500	250	875	..	..	9,250
Ashwin S.Y. 2013	4,875	250	5,125	4,875	..	..	..	250	..	..	5,125
Margashirsh S.Y. 2014	4,250	..	4,250	2,625	375	500	125	625	..	..	4,250
Vaishakh S.Y. 2014	4,750	1,500	6,250	6,250	..	..	..	..	..	..	6,250
Ashwin S.Y. 2014	97,000	14,625	1,11,625	94,875	2,625	3,250	3,125	..	6,625	1,125	1,11,625
Margashirsh S.Y. 2015	6,750	2,375	9,125	8,250	..	500	250	..	125	..	9,125
Vaishakh S.Y 2015				No futures trade.							
Ashwin S.Y. 2015				No futures trade.							
Margashirsh S.Y. 2016	7,904	5,894	13,798	13,798	..	..	..	..	..	..	13,798
Vaishakh S.Y. 2016	11,387	6,028	17,415	16,209	670	..	536	..	..	..	17,415
Ashwin S.Y. 2016	9,913	..	9,913	9,913	..	..	..	..	..	..	9,913

APPENDIX XXX

Typical examples of price-spread in the marketing of turmeric

Andhra Pradesh

Example 1

Merchant at Duggirala purchasing turmeric from villages within a radius of 10 miles and selling it to wholesale merchant at Kanpur through commission agent.

Quantity : 130·8 standard maunds or 48·8 quintals (61 bags).

Commercial quality : Duggirala unpolished fingers.

Period of transaction : June, 1961.

	Rs.	P.	Rs.	P.
Producer's net return for 65 bags of 75 kgs. each of unpolished fingers @ Rs. 66·50 per 75 kgs.				4,327·34
2. Charges incurred by the merchant :				
(a) At assembling centre :				
Brokerage and weighment charges at village @ 62 P. per bag of 75 kgs. each		40·34		
Purchase tax at 6% on purchase value		259·62		
Market committee cess @ 4 P. for 75 kgs.		2·60		
Sorting according to trade descriptions @ 31 P. per bag of 80 kgs. for 61 bags		18·91		
Refilling in bags and weighment after sorting @ 6 P. per bag		3·66		
Stitching and marking of bags @ 3 P. per bag		1·83		
Cost of new gunnies @ Rs 1·75 per gunny bag		106·75		
Cartage from godown to Duggirala Railway Station @ 12 P. per bag		7·32		
Station expenses @ 21 P. per bag		15·25		
		456·28		
(b) Railway freight from Duggirala to Kanpur (985 miles)		504·85		
(Loss during Transit 40 kgs.)				
(c) At distribution centre :				
Commission @ 4% on sale value		230·96		
Bank commission @ 18 P. per Rs. 100·00		8·88		
Telegram charges		3·92		
Hamali		7·62		
Postage		1·00		
		252·38		
TOTAL			1,213·51	1,213·51

APPENDIX XXX—*contd.*

	Rs. P.	Rs. P.
3. Margin to the merchant		229·34
4. Purchase price to wholesale merchant at Kanpur for 4,840 kgs.		5,770·19
5. Charges incurred by the wholesale merchant including taxes .		218·85
6. Margin to the wholesale merchant		254·56
7. Purchase price to retailer at Kanpur @ Rs.129 per quintal .		6,243·60
8. Charges incurred by the retailer		15·25
9. Margin to the retailer		710·75
10. Price paid by the consumer @ Rs. 1·44 per kg.		6,969·60

Example 2

Merchant at Duggirala purchasing unpolished turmeric from villages within a radius of 10 miles and selling it, after polishing, to whole sale merchant at Calcutta through commission agent.

Quantity : 623·7 standard maunds or 232·8 quintals (291 bags).

Commercial quality : Duggirala polished fingers.

Period of transaction : June 1961.

	Rs. P.	Rs. P.
1. Producer's net return for 327 bags of 75 kgs. each of unpolished finger turmeric @ Rs. 60·50 per 75 kgs.		19,783·50
2. Charges incurred by the merchant :		
(a) At assembling centre :		
Brokerage and weighment charges at villages @ 62 P. per bag for 327 bags	202·74	
Purchase tax @ 6% on purchase value	1,187·04	
Market committee cess @ 4 P. per 75 kgs.	13·08	
Cartage from village to Duggirala @ 50 P. per bag	163·50	
Sorting according to trade description @ 18 P. per bag	58·86	
Polishing charges @ 90 P. per bag of 75 kgs of polished turmeric for 291 bags	261·90	
(Polishing wastage 1,245 kgs.)		
Cost of 291 new gunnies @ Rs. 1·75 each	509·25	
Stitching and marking of bags @ 3 P. per bag	8·73	
Cartage from godown to railway station and station expenses @ 50 P. per bag	145·50	
	<hr/>	2,550·60
(b) Railway freight from Duggirala to Calcutta (777 miles) (Loss during transit 280 kgs.)	1,914·00	
(c) At distribution centre :		
Commission	655·17	
Discount to buyers	425·86	
Brokerage	223·64	
Charity	16·37	
Aushadalaya fund	2·50	
Ganesh	2·50	
Unloading at railway station	24·60	
Loading in lorry and lorry charges	120·14	
Insurance	65·50	

APPENDIX XXX—*contd.*

	Rs.	P.	Rs.	P.
Godown rent	36	37		
Bill stamp	0	90		
Association stamp	0	50		
Dibba	0	56		
Weighment	24	60		
Postage	2	00		
Bank commission	13	50		
Current interest	80	00		
	<hr/>			
		1,694	71	
	<hr/>			
TOTAL	6,159	31	6,159	31
3. Margin to the merchant			263	89
4. Purchase price to the wholesale merchant at Calcutta for 23,000 kgs.			26,206	70
5. Charges incurred by the wholesale merchant including taxes			1,529	25
6. Margin to the wholesale merchant			1,175	05
7. Purchase price to retailer at Calcutta @ Rs. 125.70 per quintal			28,911	00
8. Charges incurred by the retailer			145	50
9. Margin to the retailer			2,453	50
10. Price paid by the consumer @ Rs. 1.37 per kg. for 23,000 kgs.. . . .			31,510	00

Example 3.

Merchant at Duggirala purchasing unpolished turmeric from villages within a radius of 10 miles and, after polishing, selling it to wholesale merchant at Bombay, through commission agent.

Quantity: 2,102.7 standard maunds or 784.8 quintals (981 bags).

Commercial quality: Duggirala polished fingers.

Period of transaction: May-June, 1961.

	Rs.	P.	Rs.	P.
1. Producer's net return for 1,101 bags of 75 kgs. each of unpolished fingers @ Rs. 55.50 per 75 kgs.			61,105	50
2. Charges incurred by the merchant:				
(a) At the assembling centre:				
Brokerage and weighment charges at the village @ 62 P. per bag	682	62		
Cartage from village to Duggirala @ 50 P. per bag	550	50		
Purchase tax @ 6% on purchase value	3,666	36		
Market committee cess @ 4 P. per bag	44	04		
Sorting according to trade descriptions @ 18 P. per bag	198	18		
Polishing charges @ 90 P. per bag of 80 kgs. of polished turmeric for 981 bags	882	90		
(Wastage during polishing : 4,095 kgs.)				
Cost of new gunnies @ Rs. 1.75 per gunny for 981 gunnies	1,716	75		
Cartage to railway station and station expenses @ 37 P. per bag	362	97		
	<hr/>			
		8,104	32	

APPENDIX XXX—*contd.*

	Rs.	P.	Rs.	P.
(b) Lorry freight from Duggirala to Bombay (728 miles) @ Rs. 7 per bag	6,867	00		
(Transit loss 80 kgs.)				
(c) At distribution centre :				
Commission	1,850	13		
Vattav (Dalali)	924	81		
Fatahia (Dalali)	462	38		
Lale surage	245	34		
Fund	9	81		
Godown rent	343	35		
Telegram	60	00		
Cartage	245	25		
	4,141	07		
TOTAL	19,112	39	19,112	39
3. Margin to the merchant			2,263	59
4. Purchase price to the wholesale merchant at Bombay for 784 quintals			82,481	48
5. Charges incurred by the wholesale merchant			1,225	00
6. Margin to the wholesale merchant			2,533	52
7. Purchase price to the retailer at Bombay @ Rs. 110 per quintal			86,240	00
8. Charges incurred by the retailer			1,352	40
9. Margin to the retailer			8,055	60
10. Price paid by the consumer @ Rs. 1.22 per kg. for 78,400 kgs.			95,648	00

Example 4

Merchant at Duggirala purchasing unpolished turmeric from villages within a radius of 10 miles and, after polishing, selling it to wholesale merchant at Amritsar through commission agent.

Quantity : 578.2 standard maunds or 217.8 quintals (242 bags).

Commercial quality: Duggirala polished fingers : 92 bags.

Duggirala polished bulbs : 150 bags.

Period of transactions: May-June, 1961.

	Rs.	P.	Rs.	P.
1. Producer's net return for 306 bags of 75 kgs. each of unpolished turmeric (bulbs and fingers mixed)	18,122	60		
2. Charges incurred by the merchant:				
(a) At the assembling centre:				
Brokerage and weighment charges paid at the village @ 62 P. per bag	189	72		
Cartage from village to Duggirala @ 50 P. per bag	153	00		
Purchase tax @ 6% on purchase value	1,087	38		
Market committee cess @ 4 P. per bag of 75 kgs.	12	24		
Sorting bulbs and fingers according to trade description @ 18 P. per bag	55	08		

APPENDIX XXX—*contd.*

	Rs.	P.	Rs.	P.
Polishing charges @ Re. 1 per bag of 90 kgs. of polished turmeric for 242 bags	242	00		
(Wastage during polishing : 1,170 kgs.)				
Cost of new gunnies @ Rs. 1.75 per gunny for 242 gunnies	423	50		
Stitching and marking of bags @ 3 P. per bag	7	26		
Cartage to station and station expenses @ 50 P. per bag	121	00		
	2,291	18		
(b) Railway freight from Duggirala to Amritsar (1,423 miles)	2,719	20		
(Transit loss : 50 kgs. of fingers and 90 kgs. of bulbs)				
(c) At distribution centre :				
Commission, brokerage and discount	1,202	02		
Cartage	90	75		
Miscellaneous expenses	4	00		
Insurance	32	06		
Terminal tax	153	46		
	1,482	29		
TOTAL	6,492	67	6,492	67
3. Margin to the merchant			1,027	72
4. Purchase price to wholesale merchant at Amritsar for 82.3 quintals of fingers and 134.1 quintals of bulbs			25,642	99
5. Charges incurred by the wholesale merchant			1,081	38
6. Margin to the wholesale merchant			984	03
7. Purchase price to the retailer at Amritsar @ Rs. 133 per quintal of fingers and Rs. 125 per quintal of bulbs			27,708	40
8. Charges incurred by the retailer			72	00
9. Margin to the retailer			2,936	30
10. Price paid by the consumer @ Rs. 1.50 per kg. of fingers for 8,230 kgs. and @Rs. 1.37 per kg. of bulbs for 13,410 kgs.			30,716	70

Example 5

Merchant at Ravulapalem purchasing unpolished finger turmeric from villages within a radius of 10 miles and selling it to wholesale merchant at Calcutta through commission agent.

Quantity : 561.5 standard maunds or 209.56 quintals (330 bags).

Commercial quality: Kasturi unpolished fingers.

Period of transaction: April-May, 1961.

	Rs.	P.	Rs.	P.
1. Producer's net return for 330 bags of 140 lbs. each of unpolished finger turmeric @ Rs. 139 per candy of 500 lbs.	12,843	60		
2. Charges incurred by the merchant:				
(a) At assembling centres :				
Weighment and Khayiddadar (brokerage at village) @ 75 P. per bag	247	50		

APPENDIX XXX—*contd.*

	Rs.	P.	Rs.	P.
Cartage from village to Ravulapalem @ 25 P. per bag .	82	50		
Purchase tax @ 6% on purchase value	770	64		
Sorting according to trade description and handling @ 37 P. per bag	122	10		
Difference in value for substituting the bulbs in the lot with fingers	165	00		
Cost of new gunnies @ Rs. 1.50 per gunny for 330 gunnies.	495	00		
Boat hire charges from Ravulapalem to Rajahmundry boat jetty @ 20 P. per bag	82	50		
Rajahmundry boat jetty to Rajahmundry Railway station: cartage and station expenses @ 25 P. per bag	82	50		
			2,047	74
(b) Railway freight from Rajahmundry Railway Station to Calcutta (Transit loss : 538 kgs.)	1,504	60		
(c) At distribution centre :.				
Commission	452	44		
Discount to buyers	294	08		
Brokerage	102	09		
Charity	11	31		
Insurance	45	24		
Godown rent	77	87		
Bill stamp	1	70		
Dibba	1	06		
Unloading	22	46		
Weighment	33	69		
Ganeshji	2	50		
Aushadalaya	2	50		
Association stamp	0	50		
Postage	2	00		
Station expenses	113	89		
Lorry hire for free delivery	17	50		
Godown salami	2	89		
Current interest	132	00		
			1,315	72
TOTAL	4,868	06	4,868	06
3. Margin to the merchant			385	80
4. Purchase price to wholesale merchant at Calcutta for 20,418 kgs.			18,097	46
5. Charges incurred by the wholesale merchant including local taxes			1,129	85
6. Margin to the wholesale merchant			782	33
7. Purchase price to retailer at Calcutta @ Rs. 98 per quintal .			20,009	64
8. Charges incurred by the retailer @ 25 P. per bag			75	00
9. Margin to the retailer			2,170	98
10 Price paid by the consumer @ Rs. 1.09 per kg. for 20,418 kgs.			22,255	62

APPENDIX XXX—*contd.*

Example 6

Growers from Armour taluk selling unpolished turmeric to merchant at Nizamabad market (18 miles) through commission agent. The merchant at Nizamabad, after polishing, selling it to wholesale merchant at Hyderabad through commission agent.

Quantity : 70·7 standard maunds or 26·4 quintals (30 bags).

Commercial quality : Nizamabad polished bulbs.

Period of transaction : June-July, 1961.

	Rs.	P.	Rs.	P.
1. Producer's net return for 35·1 quintals of unpolished bulb turmeric				1,965·60
2. Charges incurred by the producer :				
Transport charges from village to Nizamabad market @ 50 P. per bag for 54 bags		27·00		
Market charges :				
Commission @ Rs. 1·50 per Rs. 100		29·48		
Hamali @ 9 P. per bag		4·86		
Education fund @ 1 P. per bag		0·54		
Weighment @ 5 P. per bag		1·62		
Market cess @ 25 P per Rs. 100		4·91		
Female labour @ 5 P. per bag		2·70		
		<u>44·11</u>		
TOTAL		71·11		71·11
3. Purchase price to the merchant at Nizamabad for 35·1 quintals				2,036·71
4. Charges incurred by the merchant :				
(a) At the assembling centre :				
Hamali charges at the market @ 12 P. per bag		6·48		
Cartage from market to polishing mill @ 12 P. per bag		6·48		
Purchase tax @ 6% on purchase value		122·22		
Sorting according to trade description @ Rs. 12 per 100 bags for 54 bags		6·48		
Drying charges @ Rs. 7·50 per 100 bags		4·05		
Polishing charges		29·62		
(Driage and polishing wastage : 870 kgs.)				
Cost of gunnies @ Rs. 1·50 per gunny for 30 gunnies.		45·00		
		<u>220·33</u>		
(b) Lorry freight from Nizamabad to Hyderabad (100 miles) @ Re. 1 per bag for 30 bags		30·00		
(c) At distribution centre :				
Commission @ Rs. 2·25 per Rs. 100		54·95		
Market charges @ 25 P. per Rs. 100		6·11		
Charity		2·11		
Coolie		3·52		
Labour		3·61		
Postage		0·25		
		<u>70·55</u>		
TOTAL		320·88		320·88

APPENDIX XXX—*contd.*

	Rs. P.	Rs. P.
5. Margin to the merchant		84.41
6. Purchase price to the wholesale merchant at Hyderabad for 26.4 quintals		2,442.00
7. Charges incurred by the wholesale merchant		11.10
8. Margin to the wholesale merchant		140.70
9. Purchase price to the retailer at Hyderabad @ Rs. 98.25 per quintal for 26.4 quintals		2,593.80
10. Charges incurred by the retailer		3.60
11. Margin to the retailer		306.6
12. Price paid by the consumer @ Rs. 1.10 per kg. for 2,640 kgs.		2,904.00

Example 7

Growers from Armoor taluk selling unpolished turmeric to merchant at Nizamabad market (18 miles) through commission agent. The merchant at Nizamabad selling it to wholesale merchant at Delhi through commission agent.

Quantity : 1,386.3 standard maunds or 517.44 quintals (588 bags).

Commercial quality : Nizamabad polished fingers : 416 bags.

Polished bulbs : 163 bags

Polished second quality bulbs : 9 bags

588 bags

Period of transaction : April-May, 1961.

	Rs. P.	Rs. P.
1. Producer's net return for 689.65 quintals of unpolished turmeric . . . . .	..	40,516.94
2. Charges incurred by the producer :		
Transport charges from village to Nizamabad @ 50 P. per bag for 1,061 bags		530.50
Market charges:		
Commission @ Rs. 1.50 per Rs. 100		607.76
Hamali @ 9 P. per bag		95.49
Education fund @ 1 P. per bag		10.61
Weightment @ 3 P. per bag		31.83
Market cess @ 25 P. per Rs. 100		101.29
Female labour @ 5 P. per bag		53.05
		<hr/> 900.03
TOTAL	1,430.53	1,430.53
3. Purchase price to the merchant at Nizamabad		41,947.47
4. Charges incurred by the merchant :		
(a) Hamali charges at market @ 12 P. per bag		127.32
Purchase tax @ 6% on purchase value		2,516.88
Cartage from market to polishing mill @ 12 P. per bag		127.32
Sorting of bulbs and fingers @ Rs. 12.00 per 100 bags		127.32
Drying charges @ Rs. 7.50 per 100 bags		79.58
Polishing charges		578.58
(Driage and polishing wastage: 17,221 kgs.)		

APPENDIX XXX—*contd.*

	Rs.	P.	Rs.	P.
Cost of new gunnies @ Rs. 1·50 per gunny	1,591	50		
Cartage from godown to Railway station including station expenses @ 37 P. per bag	392	57		
			5,541	07
(b) Railway freight from Nizamabad to Delhi (1,140 miles)	5,880	00		
(Transit loss 451 kgs.)				
(c) At distribution centre :				
Commission	567	29		
Brokerage	567	29		
Mudat	964	38		
Coolie charges	147	00		
Charity	35	45		
Postage	6	50		
Insurance	70	90		
Bank commission	108	72		
			2,467	53
TOTAL	13,888	60	13,888	60
5. Margin to the merchant			892	86
6. Purchase price to the wholesale merchant at Delhi for : Quintals				
Fingers	363	44		
Bulbs	141	68		
Second quality bulbs	7	81		
			512	93
				56,728·93
7. Charges incurred by the wholesale merchant			2,269	00
8. Margin to the wholesale merchant			1,790	60
9. Purchase price to the retailer at Delhi :				
@ Rs. 120·00 per quintal for 363·44 quintals of fingers.				
@ Rs. 115·00 per quintal for 141·68 quintals of bulbs				
@ Rs. 113·00 per quintal for 7·81 quintals of 2nd quality bulbs				
			60,788	53
10. Charges incurred by the retailer			147	00
11. Margin to the retailer			5,322	31
12. Price paid by the consumer :				
@ Rs. 1·31 per kg. of fingers for 36,344 kgs.				
@ Rs. 1·25 per kg. of bulbs for 14,168 kgs.				
@ Rs. 1·20 per kg. of second quality bulbs for 781 kgs.				
			66,257	84

Example 8

Growers from villages within a radius of 12 miles selling unpolished bulb turmeric to a forwarding agent at Cuddapah through commission agent. The forwarding agent, after polishing, despatching it to his principal at Sangli.

Quantity : 654·5 standard maunds or 244·29 quintals (370 bags).

Commercial quality : Cuddapah polished bulbs.

Period of transaction: May, 1961.

APPENDIX XXX—*contd.*

	Rs.	P.	Rs.	P.
1. Producer's net return for 370 bags or 261·82 quintals of unpolished bulb turmeric			16,799·33	
2. Charges incurred by the producer :				
Transport charges from village to Cuddapah (12 miles) @ Rs. 6·00 per cart-load for 31 cart-loads	186·00			
Market charges :				
Commission @ Rs. 4·00 per candy of 520 lbs.	444·00			
1st Madiri @ Rs. 1·25 per Rs. 100	229·84			
2nd Madiri @ Re. 0·6-8 per Rs. 100	76·55			
Interest	115·00			
Brokerage	27·75			
Coolie charges including weighment @ 0·2-6 per bag.	57·81			
Rusum @ Re. 0·1-6 per Rs. 100	17·25			
Charity @ Re. 0·3-0 per Rs. 100	34·50			
Godown rent @ Re. 0·25 per bag	92·50			
			1,095·20	
TOTAL	1,281·20		1,281·20	
3. Purchase price to the forwarding agent at Cuddapah for 261·82 quintals			18,080·53	
4. Charges paid by the wholesale merchant at Sangli:				
(a) At assembling centre—Cuddapah:				
Purchase tax at 6% on purchase value	1,084·84			
Stitching charges at market	15·42			
Cartage from market to polishing mill	57·81			
Drying charges	28·91			
Twine	16·94			
Association fund	8·13			
Market committee cess	13·87			
Polishing charges	355·14			
(Polishing wastage and driage: 1,753 kgs.)				
Weighment of polished goods	33·87			
Cartage to station and loading	101·62			
Commission	335·39			
Charity	12·00			
Postage	2·00			
			2,065·94	
(b) Railway freight from Cuddapah to Sangli (454 miles)	1,270·62			
(Transit loss : 271 kgs.)				
(c) At distribution centre	185·00			
TOTAL	3,521·56		3,521·56	
5. Cost price to the wholesale merchant at Sangli			21,602·09	
6. Margin to the wholesale merchant			864·85	

APPENDIX XXX—*contd.*

	Rs	P.	Rs.	P.
7. Purchase price to the retailer at Sangli @ Rs. 93 per quintal for 241.58 quintals			22,466	94
8. Charges incurred by the retailer			811	71
9. Margin to the retailer			2,328	83
10. Price paid by the consumer @ Rs. 1.06 per kg. for 24,158 kgs.			25,607	48

Example 9

Growers from villages within a radius of 12 miles selling unpolished finger turmeric to merchant at Cuddapah through commission agent. The merchant, after polishing, selling it to wholesale merchant at Madras through commission agent.

Quantity : 154.8 standard maunds or 57.79 quintals (65 bags).

Commercial quality : Cuddapah polished fingers.

Period of transaction: March-April, 1961.

	Rs.	P.	Rs.	P.
1. Producer's net return for 85 bags of 156 lbs. each of unpolished finger turmeric			4,766	77
2. Charges incurred by the producer :				
Transport charges from village to Cuddapah market (12 miles) @ 0.50 per bag			44	00
Market charges :				
Commission @ Rs. 4.00 per candy of 520 lbs.			106	00
1st Madiri @ Rs. 1.25 per Rs. 100			63	75
2nd Madiri @ Re. 0-6-8 per Rs. 100			21	25
Interest @ Re. 0-10-0 per Rs. 100			31	87
Brokerage @ 25 P. per candy of 520 lbs.			6	63
Coolie charges including weighment @ Re. 0-2-6 per bag			13	75
Rusum @ Re. 0-1-6 per Rs. 100			4	78
Charity @ Re. 0-3-0 per Rs. 100			9	56
Godown rent @ 25 P. per bag			11	00
			268	59
TOTAL			312	59
3. Purchase price to the merchant at Cuddapah for 88 bags of 156 lbs. each or 62.27 quintals @ Rs. 185 per candy of 500 lbs.			5,079	36
4. Charges incurred by the merchant :				
(a) At the assembling centre				
Purchase tax @ 6% on purchase value			304	74
Handling charges in the market @ 4 P. per bag			3	52
Cartage from market to mill @ 15 P. per bag			13	20
Drying charges @ 8 P. per bag			6	16
Polishing charges @ Rs. 1.31 per bag of 196 lbs. of polished turmeric for 65 bags.			85	15
(Polishing wastage and driage: 988 lbs. or 448 kgs.)				

APPENDIX XXX—*contd.*

	Rs.	P.	Rs.	P.
Weighment and handling charges of polished turmeric @ 12 P. per bag	7	80		
Association fund @ 3 P. per bag	1	95		
Market committee cess @ 12 P. per candy of unpolished turmeric	10	56		
Cost of new gunnies @ Rs. 1.75 per gunny for 65 gunnies	154	00		
			587	08
(b) Lorry freight from Cuddapah to Madras (165 miles) @ Rs. 150 per lorry load	150	00		
(c) At distribution centre :				
Godown rent @ 13 P. per bag	8	45		
Service charges @ 5 P. per bag	3	25		
Postage	0	50		
Commission @ 3%	185	51		
Brokerage @ 13 P. per bag	8	45		
			206	16
TOTAL	943	24	943	24
5. Margin to the merchant			160	93
6. Purchase price to the wholesaler at Madras for 57.79 quintals @ Rs. 107 per quintal			6,183	53
Charges incurred by the wholesaler			140	58
8. Margin to the wholesaler			206	16
9. Purchase price to retailer for 57.79 quintals @ Rs. 113 per quintal			6,530	27
10. Charges incurred by the retailer			16	25
11. Margin to the retailer			677	23
12. Price paid by the consumer @ Rs. 1.25 per kg. for 5,779 kgs.			7,223	75

Madras State

Example 10

Growers from villages within a radius of 12 miles selling unpolished finger turmeric to merchant at Erode through commission agent. The merchant, after polishing, selling it to wholesale merchant at Madras through commission agent.

Quantity: 13.6 standard maunds or 5.09 quintals (7 bags).

Commercial quality: Erode polished fingers.

Period of transaction: March-April, 1961.

	Rs.	P.	Rs.	P.
1. Producer's net return for 8 bags or 525 kgs. of unpolished finger turmeric			390	35
2. Charges incurred by the producer :				
Cartage from village to market (12 miles) @ 50 P. per bag for 8 bags	4	00		

APPENDIX XXX—*contd.*

	Rs. P.	Rs. P.
Market charges paid :		
Commission @ Rs. 6·25 per Rs. 100	26·81	
Weighment and handling @ 31 P. per bag	2·48	
Trade allowance @ 3 1/2 lbs. per 280 lbs.	5·36	
	<hr/> 34·65	
TOTAL	38·65	38·65
3. Purchase price to the merchant at Erode @ Rs. 104 per sattai of 280 lbs. for 525 kgs.		429·00
4. Charges incurred by the merchant :		
(a) At the assembling centre :		
Association fund	0·24	
Sales tax @ 1 per cent	4·29	
Transport charges from market to polishing mill and to godown @ 25 P. per bag	2·00	
Sorting according to trade description @ 12 P. per bag	0·96	
Polishing charges @ 68 P. per bag	5·44	
(Polishing wastage: 16 kg.)		
Bagging and stitching @ 12 P. per bag	0·96	
Cost of new gunnies @ Rs. 1·50 per gunny	10·50	
	<hr/> 24·39	
(b) Lorry freight from Erode to Madras (244 miles)	16·41	
(c) At the distributing centre :		
Godown rent	0·91	
Service charges	0·35	
Postage	0·50	
Commission	15·06	
Brokerage	0·91	
	<hr/> 17·73	
TOTAL	58·53	58·53
5. Margin to the merchant		14·76
6. Purchase price to the wholesale merchant at Madras for 509 kgs. of polished finger turmeric		502·29
7. Charges incurred by the wholesale merchant		11·86
8. Margin to the wholesale merchant		20·30
9. Purchase price to the retailer at Madras @ Rs. 105 per quintal for 5·09 quintals		534·45
10. Charges incurred by the retailer		1·75
11. Margin to the retailer		49·15
12. Price paid by the consumer @ Rs. 1·15 per kg. for 509 kgs.		585·35

APPENDIX XXX—*contd.**Example 11*

Growers from villages within a radius of 13 miles selling unpolished [finger turmeric to merchant at Salem through commission agent. The merchant, after polishing, selling it to wholesale merchant at Delhi through commission agent.

Quantity: 166·4 standard maunds or 62·10 quintals (69 bags).

Commercial quality: Salem polished fingers.

Period of transaction : May 1961.

	Rs. P.	Rs. P.
1. Producer's net return for 64·02 quintals of unpolished finger turmeric (100 bags of 140 lbs. each approximately) . . . . .	..	6,280·24
2. Charges incurred by the producer:		
Transport charges from village to Salem market (13 miles) @ 75 P. per bag	75·00	
Market charges :		
Commission @ Rs. 2·50 per Rs. 100	163·48	
Weighment @ 12 P. per bag	12·00	
Handling charges	8·28	
	<hr/> 183·76	
TOTAL	258·76	258·76
3. Purchase price to the merchant at Salem for 64·02 quintals @ Rs. 130 per sattai of 280 lbs. . . . .	..	6,539·00
4. Charges incurred by the merchant :		
(a) At assembling centre :		
Sales tax @ 2% on purchase value	130·78	
Cartage from godown to polishing mills and back @ 25 P. per bag	25·00	
Polishing charges @ Rs. 1·25 P. per bag of unpolished turmeric	125·00	
(Polishing wastage : 192 kgs.)		
Cost of gunnies @ Rs. 1·50 per gunny for 69 gunnies	103·50	
Cartage from godown to Railway station @ 19 P. per bag	13·11	
	<hr/> 397·39	
(b) Railway freight from Salem to Delhi (1,563 miles)	926·86	
(Transit loss 90 kgs.)		
(c) At the distribution centre :		
Discount	144·65	
Brokerage	85·09	
Commission	106·37	
Charity	5·31	
Labour charges	8·62	
Insurance	21·25	
Postage	1·00	
	<hr/> 372·29	
TOTAL	1,696·54	1,696·54

APPENDIX XXX—*contd.*

	Rs.	P.	Rs.	P.
5. Margin to the merchant			272	93
6. Purchase price to the wholesale merchant at Delhi for 61·20 quintals			8,508	47
7. Charges incurred by the wholesale merchant			298	71
8. Margin to the wholesale merchant			372	82
9. Purchase price to the retailer at Delhi at Rs. 150 per quintal for 61·20 quintals			9,180	00
10. Charges incurred by the retailer			17	25
11. Margin to the retailer			594	75
12. Price paid by the consumer @ Rs. 1·60 per kg. for 6,120 kgs.			9,792	00

Example 12

Growers from villages within a radius of 12 miles selling unpolished finger turmeric to merchant at Erode through commission agent. The merchant, after polishing, selling it to wholesale merchant at Calcutta through commission agent.

Quantity: 148·7 standard maunds or 55·5 quintals (75 bags).

Commercial quality : Erode polished fingers.

Period of transaction : May 1961.

	Rs.	P.	Rs.	P.
1. Producer's net return for 45·5 satta of 280 lbs. (57·79 quintals) of unpolished finger turmeric			4,470	92
2. Charges incurred by the producer :				
Cartage from village to market (12 miles) @ 50 P. per bag for 92 bags		46	00	
Market charges :				
Commission @ Rs. 6·25 per Rs. 100	307	13		
Weighment and handling @ 31 P. per bag	28	52		
Trade allowance @ 3½ lbs. per 280 lbs.	61	43		
		397	08	
		TOTAL	443	08
3. Purchase price to the merchant at Erode @ Rs. 108 per satta of 280 lbs. for 45·5 satta			4,914	00
4. Charges incurred by the merchant :				
(a) At the assembling centre :				
Association fund @ 3 P. per bag	2	70		
Sales tax @ 1%	49	14		
Transport charges from market to polishing unit and to godown @ 25 P. per bag	22	50		
Sorting according to trade descriptions @ 12 P. per bag	10	08		
Hand polishing charges @ Rs. 1·81 per bag of unpolished turmeric	162	90		
(Polishing wastage : 229 kgs.)				
Refilling, bagging, etc., @ 12 P. per bag	10	08		
Cost of gunny @ Rs. 1·50 per gunny for 75 gunnies	112	50		
		369	90	

APPENDIX XXX—*contd.*

Rs. P.

(b) Transport charges :

Lorry freight from Erode to Madras @ Rs. 1·70 P. per bag for 75 bags (244 miles)	127·50
Steamer freight from Madras to Calcutta for 75 bags (Transit loss : 75 kgs.)	187·50
	<u>315·00</u>

(c) At the distribution centre :

Shipment expenses at Madras	48·75
Commission	162·24
Discount to buyer	105·45
Brokerage	27·46
Charity	4·05
Insurance	16·22
Godown rent	28·12
Bill stamp	0·20
Dibba	0·12
Unloading	6·04
Weighment	6·04
Ganesh	1·25
Aushadalaya	1·25
Association stamp	0·25
Postage	1·00
Chalan	10·00
Mukkadami	5·62
Loading	7·80
Lorry hire	39·00
Miscellaneous	3·15
Commission to broker	28·12
Current interest	148·50
Landing	73·85
Godown salami	1·56
	<u>726·04</u>

TOTAL . 1,410·94 1,410·94

5. Margin to the merchant	164·50
6. Purchase price to wholesale merchant at Calcutta for 54·75 quintals	6,489·44
7. Charges incurred by the wholesale merchant	380·70
8. Margin to the wholesale merchant	247·36
9. Purchase price to the retailer at Calcutta @ Rs. 130 per quintal for 54·75 quintals	7,117·50
10. Charges incurred by the retailer	37·50
11. Margin to the retailer	729·00
12. Price paid by the consumer @ Rs. 1·40 per kg. for 5,475 kgs.	7,884·00

APPENDIX XXX—*contd.**Example 13*

Growers from villages within a radius of 12 miles selling unpolished finger turmeric to merchant at Erode through commission agent. The merchant, after polishing, selling it to wholesale merchant at Delhi through commission agent.

Quantity : 526·1 standard maunds or 196·35 quintals (231 bags).

Commercial quality : Erode polished fingers.

Period of transaction : April-May 1961.

	Rs. P.	Rs. P.
1. Producer's net return for 159·1 sattaish of 280 lbs. each (202·45 quintals)	..	19,256·81
2. Charges incurred by the producer :		
Cartage from village to Erode market (12 miles) for 318 bags @ 0·50 per bag	159·00	
Market charges :		
Commission @ Rs. 6·25 per Rs. 100	1318·56	
Weighment and handling @ 0·31 P. per bag	98·58	
Trade allowance @ 3½ lbs. per 280 lbs.	263·71	
	1,680·85	
	TOTAL	1,839·85
3. Purchase price to merchant at Erode for 159·1 sattaish (202·45 quintals) @ Rs. 132·60 per sattaish of 280 lbs.		21,096·66
4. Charges incurred by the merchant :		
(a) At the assembling centre :		
Association fund @ 3 P. per bag	9·54	
Sales tax @ 1% on purchase value	210·97	
Transport charges from market to polishing unit and back @ 5 P. per bag	79·50	
Sorting according to trade description @ 0·12 P. per bag	38·16	
Polishing charges @ 0·68 P. per bag of polished turmeric (Polishing wastage : 610 kgs.)	216·24	
Bagging, stitching, etc. @ 0·12 P. per bag	38·16	
Cost of gunnies @ Rs. 1·50 per bag for 231 gunnies	346·50	
Cartage from godown to Railway station @ 0·19 P. per bag	43·89	
	982·96	
(b) Railway freight from Erode to Delhi (1,601 miles) (Transit loss 231 kgs.)	2,634·80	
(c) At distribution centre :		
Terminal tax	51·90	
Cartage from godown	111·47	
R.R. expenses	10·25	
Wages	20·10	
Commission	265·94	
Brokerage	265·94	
Muddad	452·10	

APPENDIX XXX—*contd.*

	Rs. P.	Rs. P
Ganesh	7·22	
Postage	5·00	
Telegram	6·88	
Bank commission and interest	96·00	
	<u>1,292·80</u>	
TOTAL	4,910·56	4,910·56
5. Margin to the merchant		586·57
6. Purchase price to the wholesale merchant at Delhi for 194·04 quintals		26,593·79
7. Charges incurred by the wholesale merchant		1,063·76
8. Margin to the wholesale merchant		866·33
9. Purchase price to the retailer at Delhi for 194·04 quintals @ Rs. 147·00 per quintal		28,523·88
10. Charges incurred by the retailer		72·75
11. Margin to the retailer		2,449·77
12. Price paid by the consumer @ Rs. 1·60 per kg. for 19,404 kgs.		31,046·40

Example 14

Growers from villages within a radius of 9 miles selling unpolished finger turmeric to merchant at Karur through commission agent. The merchant, after polishing, selling it to wholesale merchant at Trichur through commission agent.

Quantity : 37·4 standard maunds or 13·97 quintals (22 bags).

Commercial quality : Karur polished fingers.

Period of transaction : March 1961.

	Rs. P.	Rs. P.
1. Producer's net return for 11·6 sattaish of 280 lbs. each of unpolished finger turmeric (14·73 quintals)		1,274·59
2. Charges incurred by the producer:—		
Transport charges from village to market (9 miles) @ 50 P. per bag for 23 bags	11·50	
Commission @ Rs. 1·25 per bag of 140 lbs.	29·00	
	<u>40·50</u>	40·50
3. Purchase price to the merchant at Karur for 11·6 sattaish of 280 lbs. each of unpolished fingers (14·73 quintals) @ Rs. 113·37 per sattaish		1,315·09
4. Charges incurred by the merchant :		
(a) At the assembling centre :		
Handling and weighment @ 62 P. per bag	14·26	
Brokerage @ 25 P. per bag	5·75	
Sales tax @ 2% on purchase value	26·30	
Transport charges from godown to polishing unit and back @ 19 P. per bag	4·37	

APPENDIX XXX—*contd.*

	Rs.	P.	Rs.	P.
Polishing charges @ Rs. 1·06 per bag of 140 lbs. (polishing wastage 76 kgs.) of unpolished turmeric	24·38			
Cost of 22 gunnies @ Rs. 1·75 each	38·50			
	113·56			
(b) Lorry freight from Karur to Trichur (185 miles)	52·75			
(c) At distribution centre :				
Commission	47·44			
Weighment and unloading	3·44			
Mahimai and postage	7·94			
Coolie charges	4·81			
	63·63			
TOTAL	229·94		229·94	
5. Margin to the merchant			36·87	
6. Purchase price to the wholesale merchant at Trichur for 13·97 quintals			1,581·90	
7. Charges incurred by the wholesale merchant			47·46	
8. Margin to the wholesale merchant			47·04	
9. Purchase price to the retailer at Trichur @ Rs. 120 per quintal for 13·97 quintals			1,676·40	
10. Charges incurred by the retailer			2·86	
11. Margin to the retailer			150·81	
12. Price paid by the consumer @ Rs. 1·31 per kg. for 1,397 kgs. .			1,830·07	

Maharashtra State*Example 15*

Growers from villages within a radius of 12 miles selling unpolished finger turmeric to forwarding agent at Sangli, who, after polishing, despatches it to his principal at Bombay.

Quantity : 10·0 standard maunds or 3·73 quintals (4 bags)

Commercial quality : Rajapuri polished fingers.

Period of transaction : May-June 1961.

	Rs.	P.	Rs.	P.
1. Producer's net return for 10·3 standard maunds or 3·84 quintals of unpolished finger turmeric			360·42	
2. Charges incurred by the producer:				
Cartage from village to Sangli market (12 miles)[@ 75 P. per bag for 4 bags	3·00			
Market charges :				
Commission @ Rs. 1·56 per Rs. 100	5·78			
Hamali and weighment @ 15 P. per bag	0·60			
Market cess @ 6 P. per bag	0·24			
Octroi @ 19 P. per bag	0·76			
	7·38			
TOTAL	10·38		10·3	

APPENDIX XXX—*contd.*

	Rs. P.	Rs. P.
3. Purchase price to the forwarding agent at Sangli for 10·3 standard maunds or 3·84 quintals @ Rs. 36·00 per maund . . .		370·80
4. Charges paid by the wholesale merchant at Bombay :		
(a) At the assembling centre :		
Commission to forwarding agent	3·90	
Hamali	0·24	
Weighment	0·08	
Transport from market to polishing unit	0·37	
Polishing charges	1·25	
(Polishing wastage 11 kgs.)		
	<hr/> 5·84	
(b) Lorry freight from Sangli to Bombay (286 miles) . . .	22·00	
(c) At the distribution centre	Nil	
	<hr/> 27·84	27·84
5. Purchase price to the wholesale merchant at Bombay for 3·73 quintals		398·64
6. Margin to the wholesale merchant		14·96
7. Purchase price to retailer at Bombay for 10 standard maunds or 3·73 quintals @ Rs. 41·36 per standard maund . . .		413·60
8. Charges incurred by the retailer		6·64
9. Margin to the retailer		39·76
10. Price paid by the consumer for 400 seers (373 kgs.) @ Rs. 1·15 per seer		460·00

Example 16

Growers from villages within a radius of 10 miles selling unpolished finger turmeric to merchant at Sangli through commission agent. The merchant, after polishing, selling it to wholesale merchant at Ahmedabad through commission agent.

Quantity : 30 standard maunds or 11·20 quintals (12 bags).

Commercial quality : Rajapuri polished fingers.

Period of transaction : May-June 1961.

	Rs. P.	Rs. P.
1. Producer's net return for 31 standard maunds or 11·57 quintals of unpolished finger turmeric		1,088·09
2. Charges incurred by the producer :		
Cartage from village to Sangli market (10 miles) @ 50 P. per bag for 12 bags	6·00	
Market charges :		
Commission Rs. 1·56 per Rs. 100	17·41	
Weighment @ 3 P. per bag	0·36	
Hamali @ 12 P. per bag	1·14	
Market cess @ 6 P. per bag	0·72	
Octroi @ 19 P. per bag	2·28	
	<hr/> 21·91	
TOTAL	<hr/> 27·91	27·91

APPENDIX XXX—*contd.*

	Rs.	P.	Rs.	P.
3. Purchase price to merchant at Sangli for 31 standard maunds or 11·57 quintals of unpolished finger turmeric @ Rs. 36·00 per standard maund			1,116	00
4. Charges incurred by the merchant :				
(a) At the assembling centre :				
Cartage from market to polishing unit and back @ 12 P. per bag		1	44	
Polishing charges @ 70 P. per standard maund of polished turmeric for 30 standard maunds		21	00	
(Polishing wastage 1 standard maund or 37 kgs.)				
Cost of 12 new gunnies @ Rs. 1·50 each		18	00	
			40	44
(b) Railway freight from Sangli to Ahmedabad (592 miles) for 12 bags		98	00	
(c) At the distribution centre :				
Commission @ 2 per cent		27	00	
Brokerage @ 1 per cent		13	50	
Discount @ 0·5 per cent		6	75	
Coolie charges @ 3 P. per bag		0	36	
Godown rent		10	50	
Insurance @ 25 P. per Rs. 100		3	38	
			61	49
			TOTAL	
		199	93	199 93
5. Margin to the merchant			34	07
6. Purchase price to the wholesale merchant at Ahmedabad for 30 standard maunds or 11·26 quintals @ Rs. 45 per standard maund			1,350	00
7. Charges incurred by the wholesale merchant			9	00
8. Margin to the wholesale merchant			81	00
9. Purchase price to retailer for 30 standard maunds @ Rs. 48·00 per standard maund			1,440	00
10. Charges incurred by the retailer			3	00
11. Margin to the retailer			117	00
12. Price paid by the consumer for 1,200 seers or 300 standard maunds @ Rs. 1·30 per seer			1,560	00

Orissa State

Example 17

Growers from villages within a radius of 10 miles selling unpolished finger turmeric to merchant at Tikkabali through commission agent. The merchant at Tikkabali selling the produce to a merchant at Berhampur through commission agent. This merchant in turn selling it to wholesale merchant at Calcutta through commission agent.

Quantity : 61·8 standard maunds or 23·05 quintals (30 bags).

Commercial quality : Berhampuri unpolished fingers.

tion: April-May 1961.

APPENDIX XXX—*contd.*

	Rs.	P.	Rs.	P.
1. Producer's net return for 23·05 quintals of unpolished finger turmeric			1,535	20
2. Charges incurred by the producer :				
Market cess	11	50		
Handling	1	38		
Commission	15	63		
	28	51	28	51
3. Purchase price to merchant at Tikkabali for 23·05 quintals			1,563	71
4. Charges incurred by the merchant at Tikkabali :				
(a) At assembling centre (Tikkabali) :				
Loading and unloading	2	30		
Sorting	7	19		
Cost of gunnies	23	00		
	32	49		
(b) Lorry freight from Tikkabali to Berhampur (95 miles)	37	00		
(c) At Berhampur centre :				
Commission	26	61		
Rusum	17	03		
Weighment, etc.	2	87		
Charity	0	31		
	46	82		
	116	31	116	31
5. Margin to the merchant at Tikkabali			22	91
6. Purchase price to merchant at Berhampur for 23·05 quintals @ Rs. 36·94 per 50 kgs.			1,702	93
7. Charges incurred by the merchant at Berhampur :				
(a) Railway freight from Berhampur to Calcutta (375 miles) (Transit loss 55 kgs.)	114	10		
(b) At the distribution centre (Calcutta) :				
Commission	47	83		
Miscellaneous	9	57		
	57	40		
	171	50	171	50
8. Margin to the merchant at Berhampur			38	07
9. Purchase price to the wholesale merchant at Calcutta for 22·50 quintals @ Rs. 8·85 per quintal			1,912	50
10. Charges incurred by the wholesaler			121	15
11. Margin to the wholesaler			70	10

APPENDIX XXX—*contd.*

	Rs.	P.	Rs.	P.
12. Purchase price to the retailer at Calcutta for 22·50 quintals @ Rs. 93·50 per quintal			2,103	75
13. Charges incurred by the retailer			7	50
14. Margin to the retailer			206	25
15. Price paid by the consumer @ Rs. 1·03 per kg. for 2,250 kgs. .			2,317	50

Example 18

Growers from villages within a radius of 20 miles selling unpolished finger turmeric to merchant at Berhampur through commission agent. The merchant selling it directly to the wholesale merchant at Raipur.

Quantity : 30·9 standard maunds or 11·52 quintals (15 bags.)

Commercial quality : Berhampuri unpolished fingers.

Period of transaction : June, 1961.

	Rs.	P.	Rs.	P.
1. Producer's net return for 11·52 quintals of unpolished finger turmeric.			810	76
2. Charges incurred by the producer :				
Cartage from village to Berhampur	18	00		
Market charges :				
Commission @ Rs. 1·56 per Rs. 100	13	30		
Rusum @ 1 per cent	8	52		
Weighment, etc., @ 12 P. per bag	1	80		
Charity	0	10		
			23	72
TOTAL	41	72	41	72
3. Purchase price to merchant at Berhampur for 11·52 quintals @ Rs. 74 per quintal			852	48
4. Charges incurred by the merchant :				
Central sales tax @ 1 per cent	9	22		
Weighment charges	2	25		
Godown rent	3	75		
Cost of 15 gunnies @ 80 P. each	12	00		
Cartage from godown to Railway station @ 12 P. per bag	1	80		
Railway freight from Berhampur to Raipur (424 miles) (Transit loss 27 kgs.)	63	25		
TOTAL	92	27	92	27
5. Margin to the merchant at Berhampur			69	12
6. Purchase price to the wholesale merchant at Raipur for 1,125 kgs.			1,013	87
7. Charges incurred by the wholesale merchant			3	75
8. Margin to the wholesale merchant			39	88
9. Purchase price to the retailer at Raipur for 11·25 quintals @ Rs. 94·00 per quintal			1,057	50
10. Charges incurred by the retailer			31	74
11. Margin to the retailer			131	88
12. Price paid by the consumer for 1,125 kgs. (612 kgs. @ Rs. 1·09 and 513 kgs. @ Rs. 1·08)			1,221	12

APPENDIX XXX—*concl'd.**Example 19*

Growers from villages within a radius of 20 miles selling unpolished finger turmeric to merchant at Berhampur through commission agent. The merchant selling it directly to wholesale merchant at Cuttack.

Quantity : 33·8 standard maunds or 12·60 quintals (15 bags).

Commercial quality : Berhampuri unpolished fingers.

Period of transaction : June, 1961.

	Rs.	P.	Rs.	P.
1. Producer's net return for 30·8 standard maunds (12·60 quintals) of unpolished finger turmeric			986	71
2. Charges incurred by the producer :				
Cartage from village to Berhampur market (20 miles) for 2 cart-loads (15 bags) @ Rs. 6·00 per cart-load			12	00
Market charges :				
Commission @ Rs. 1·56 per Rs. 100			16	02
Hamali @ 12 P. per bag			1	80
Rusum @ 1 per cent			10	27
Charity			0	10
			<hr/>	<hr/>
			28	19
			<hr/>	<hr/>
			40	19
				40·19
3. Purchase price to merchant at Berhampur for 12·6 quintals @ Rs. 81·50 per quintal				1,026·90
4. Charges incurred by the merchant :				
Brokerage			10	84
Charity			0	11
Miscellaneous			0	50
Handling			0	75
Cost of gunnies			12	81
Lorry freight from Berhampur to Cuttack (29 miles)			18	00
			<hr/>	<hr/>
			43	01
			<hr/>	<hr/>
				43·01
5. Margin to the merchant				31·50
6. Purchase price to the wholesale merchant at Cuttack for 12·6 quintals				1,101·41
7. Charges incurred by the wholesaler				4·32
8. Margin to the wholesaler				62·92
9. Purchase price to the retailer at Cuttack for 12·60 quintals @ Rs. 92·75 per quintal				1,168·65
10. Charges incurred by the retailer				4·00
11. Margin to the retailer				125·15
12. Price paid by the consumer for 1,260 kgs. @ Rs. 1·03 per kg.				1,297·80

APPENDIX XXXI

Typical examples of price-spread in the export of turmeric

Example 1

Growers from villages within a radius of 20 miles selling unpolished finger turmeric to exporter at Cochin through purchasing agents in village. The exporter exporting the produce to buyer at New York through broker at New York.

Quantity : 272·2 standard maunds or 101·6 quintals (160 bags).

Commercial quality : Alleppey unpolished finger turmeric.

Period of transaction : March 1961.

	Rs.	P.	Rs.	P.
1. Producer's net return for 37 candies of 6 cwts. each @ Rs. 346 per candy				12,702·00
2. Charges incurred by the exporter at Cochin for assembling :				
Brokerage at village @ 60 P. per cwt. for 222 cwts. or 37 candies	133	20		
Cartage from village to the market @ Re. 1 per bag for 156 bags (222 cwts.)	156	00		
Processing, sorting and garbling @ Rs. 8 per candy or 6 cwts. for 37 candies	296	00		
(Shortage during processing and garbling : 2,464 lbs. or 22 cwts.)				
Cost of 160 new gunnies @ Rs. 2 each	320	00		
Purchase tax @ 4% on purchase value	508	08		
Surcharge @ 5% on purchase tax	25	40		
Cess @ 20 P. per cwt. of garbled turmeric for 200 cwts.	40	00		
	1,478	68	1,478	68
3. Shipment expenses :				
F.O.B. expenses	150	00		
Cables and postal charges	50	00		
	200	00	200	00
4. Steamer freight from Cochin Harbour to New York (\$789·77)			3,743	51
5. Expenses at destination (\$102·87) (Brokerage and commission)			487	60
6. Margin to the exporter			500	61
7. Price paid by the buyer at New York @ 18 cents per lb. for 10 long tons				19,112·40

NOTE.—Exchange rate : 1 dollar=Rs. 4·74 (approximately)

Example 2

Growers from villages within a radius of 20 miles selling unpolished finger turmeric to exporter at Cochin through commission agent. The exporter exporting the produce to buyer at Sanfransisco through broker at London.

Quantity : 204·16 standard maunds or 76·46 quintals (120 bags).

Commercial quality : Alleppey unpolished finger turmeric.

Period of transaction : April 1961.

APPENDIX XXXI—*contd.*

	Rs.	P.	Rs.	P.
1. Producer's net return for 28 candies of 6 cwts. each .			9,597	75
2. Charges incurred by the producer :				
Cartage from village to the market (20 miles) @ Rs. 1.25 P. per bag for 117 bags (28 candies)	146	25		
Commission @ Rs. 12 per candy of 6 cwts. each for 28 candies	336	00		
	482	25	482	25
3. Purchase price to exporter at Cochin for 28 candies of 6 cwts. each @ Rs. 360.00 per candy . . . . .	..		10,080	00
4. Charges incurred by the exporter at Cochin for assembling :				
Processing, sorting and garbling @ Rs.6 per candy of 6 cwts. for 28 candies	168	00		
(Loss: 1,959 lbs.)				
Cost of 120 new gunnies @ Rs. 2 each	240	00		
Purchase tax @ 4 % on purchase value	403	20		
Surcharge @ 5% on purchase tax	20	15		
Cess @ 20 P. per cwt. of garbled turmeric for 16,857 lbs.	30	10		
	861	45	861	45
5. Shipment expenses :				
F.O.B. expenses @ 75 P. per cwt.	112	87		
Postage and cable charges	37	50		
	150	37	150	37
6. Steamer freight from Cochin to Sanfransisco (\$658.89)			3,066	14
7. Expenses at destination :				
Weighment and tarring \$17.54	104	72		
Commission @ 1 per cent \$4.98	148	49		
	253	21	253	21
8. Margin to the exporter			437	63
9. Price paid by the buyer at Sanfransisco for 16,857 lbs. of Alleppey unpolished finger turmeric:				
11,247 lbs. @ 150 shillings per cwt.			14,848	80
5,610 lbs. @ 155 shillings per cwt.				
16,857				

NOTE.—Exchange rate : 1 \$=Rs. 4.65 (approximately).

1 £=Rs. 13.01 (approximately)..

Example 3

Growers from villages within a radius of 10 miles selling unpolished finger turmeric to exporter at Erode through commission agent. The exporter, after polishing, exporting it to buyer at Colombo.

Quantity : 204.2 standard maunds (100 bags).

Commercial quality : Erode polished fingers.

Period of transaction : April, 1961.

APPENDIX XXXI—*contd.*

	Rs.	P.	Rs.	P.
1. Producer's net return for 62 sattaish of unpolished finger turmeric (17,360 lbs.)			5,792	26
2. Charges incurred by the producer :				
Cartage from village to Erode market @ 50 P. per bag for 124 bags			62	00
Market charges :				
Commission @ Rs. 6.25 per Rs. 100			398	19
Weighment and handling @ 31 P. per bag			38	44
Trade allowance @ 3½ lbs. per 280 lbs.			79	61
			516	24
			578	24
			578	24
3. Purchase price to the exporter at Erode for 62 sattaish (17,360 lbs.) of unpolished finger turmeric @ Rs. 102.75 per sattaish of 280 lbs.			6,370	50
4. Charges incurred by the exporter :				
(a) For assembling :				
Association fund @ 3 P. per bag			3	72
Sales tax @ 1 per cent			63	71
Transport charges from market to polishing mill and back @ 25 P. per bag for 124 bags			31	00
Sorting according to trade descriptions @ 12 P. per bag			14	88
Polishing charges @ 37 P. per bag			45	88
(Polishing wastage : 560 lbs.)				
Labour charges @ 31 P. per bag			38	44
Bagging, stitching, etc., @ 12 P. per bag			14	88
Cost of 100 new gunnies @ Rs. 1.75 per gunny			175	00
			387	51
(b) Lorry freight from Erode to Tuticorin Port			187	50
Steamer freight from Tuticorin to Colombo			203	00
			390	50
(c) Forwarding expenses at Tuticorin :				
Unloading charges			3	12
Shipping bill			0	31
Handling charges			12	00
Rent			12	00
Customs weighment			0	62
Customs tax			30	00
Miscellaneous			4	50
Watchman's wages			3	00
Loading into boats			4	69
Customs and post office overtime fees			1	75
Bill stamp			0	50
Tally clerk fee			1	00
Mahimai			1	00
Commission			12	50

APPENDIX XXXI—*contd.*

	Rs.	P.	Rs.	P.
Postage-shipping	0	15		
Insurance premium	12	50		
Shipment telegram	1	51		
Postage	2	65		
	<hr/>			
		103	80	
	<hr/>			
TOTAL	881	81	881	81
5. Margin to the exporter at Erode			247	69
6. C.I.F. price to the importer at Colombo for 100 bags each of 168 lbs. of polished turmeric (16,800 lbs.) @ Rs. 50 per cwt.			7,500	00

Example 4

Growers from villages within a radius of 9 miles selling unpolished finger turmeric to exporter at Karur through commission agents. The exporter, after polishing, exporting it to buyer at Colombo:

Quantity : 204·2 standard maunds (100 bags).

Commercial quality : Karur polished fingers.

Period of transaction : July, 1961.

	Rs.	P.	Rs.	P.
1. Producer's net return for 63·2 sattaish (17,696 lbs.) of unpolished finger turmeric . . . . .	..		6,620	40
2. Charges incurred by the producers :				
Cartage from village to Karur market (9 miles) @ 50P. per bag for 126 bags	63	00		
Commission @ Rs. 1·25 per bag of 140 lbs.	158	00		
	<hr/>			
TOTAL	221	00	221	00
3. Purchase price to the exporter at Karur for 63·2 sattaish (17,696 lbs.) of unpolished turmeric @ Rs. 108·25 per sattaish of 280 lbs.			6,841	40
4. Expenses incurred by the exporter at Karur :				
(a) For assembling :				
Handling and weightment including transport to godown @ 62 P. per bag	78	12		
Brokerage @ 25 P. per bag	31	50		
Transport charges from godown to polishing unit and back @ 19 P. per bag	23	94		
Sales tax @ 2%	136	82		
Polishing charges @ Rs. 1·06 per bag	133	56		
(Polishing wastage : 896 lbs.)				
Cost of 100 gunnies @ Rs. 1·75 per gunny	175	00		
	<hr/>			
		578	94	
(b) Lorry freight from Karur to Tuticorin	162	50		
Steamer freight from Tuticorin to Colombo	131	00		
	<hr/>			
		293	50	

APPENDIX XXXI—*concl'd.*

	Rs. P.	Rs. P.
(c) Forwarding expenses at Tuticorin :		
Unloading from lorry	3·12	
Shipping bill	0·31	
Handling charges	1·00	
Rent	12·00	
Customs weighment	1·25	
Customs tax	29·14	
Miscellaneous	4·50	
Watchman's wages	1·50	
Loading into the boats	4·69	
Loading	1·75	
Bill stamp	0·20	
Tally clerk's fee	1·00	
Mahimai	1·00	
Commission	25·00	
Postage-shipping	0·15	
Insurance premium	41·90	
Shipment telegram charges	1·38	
	<hr/> 129·89	
TOTAL	1,002·33	1,002·33
5. Margin to the exporter at Karur		256·27
6. C.I.F. price to the importer at Colombo for 100 bags each of 168 lbs. (16,800 lbs.) of polished turmeric @ Rs. 54 per cwt.		8,100·00

APPENDIX XXXII

Analysis of costs and margins in the marketing of turmeric

ANDHRA PRADESH

Example No.	1	2	3	4
From	Duggirala	Duggirala	Duggirala	Duggirala
To	Kanpur	Calcutta	Bombay	Amritsar
Distance (miles)	985	777	728	1,423
Commercial quality	Duggiralaunpolished fingers	Duggirala polished fingers	Duggirala polished fingers	Duggirala polished (mixed)
Actual quantity (standard maund)	130.8	623.7	2,102.7	578.2

	Rs. P.	Percentage	Rs. P.	Percentage	Rs. P.	Percentage
1. Producer's net return	3.08	62.1	31.72	62.8	29.06	63.9
2. Marketing costs						
(a) Assembling costs	3.49	6.6	4.09	1	3.85	8.5
(b) Transport charges from assembling centre to distributing centre	3.86	7.2	3.07	6.1	3.27	7.2
(c) Distribution costs	3.72	7.0	5.40	10.7	3.20	7.0
TOTAL	11.01		12.56	24.9	10.32	22.7

3. Margins of intermediaries :						
(a) Merchant at assembling centre	1.75	3.3	0.42	0.8	.08	2.4
(b) Wholesale merchant at distributing centre	1.95	3.6	1.88	3.7	1.20	2.6
(c) Retailer at distributing centre	5.43	10.2	3.94	7.8	3.83	8.4
TOTAL	9.13	17.1	6.24	12.3	.11	13.4
Value paid by the consumer	53.28	100.0	50.52	100.0	49	100.0
					53.12	00.0

APPENDIX XXXII—*contd.*

ANDHRA PRADESH

Example No.	From	To	Distance (miles)	Commercial quality	Actual quantity (standard maund)	5	6	7	8	9	Average						
						Ravulapalam Calcutta 692	Nizamabad Hyderabad 100	Nizamabad Delhi 1,140	Cuddapah Sangli 454	Cuddapah Madras 165	718						
						Kasturi un- polished fingers 561.5	Nizamabad poli- shed bulbs 70.7	Nizamabad poli- shed (mixed) 1,386.3	Cuddapah poli- shed bulbs 654.5	Cuddapah poli- shed fingers 154.8							
						Rs. P.	Percen- tage	Rs. P.	Percen- tage	Rs. P.	Percen- tage	Rs. P.	Percen- tage	Rs. P.	Percen- tage		
1. Producer's net return	22.87	57.7	27.80	67.7	29.23	61.1	25.67	65.6	30.79	66.0	29.06	62.8
Marketing costs :																	
(a) Assembling costs	3.65	9.2	4.12	10.0	5.03	10.5	4.60	11.8	5.81	12.4	4.30	9.3
(b) Transport charges from assembling centre to distributing centre	2.68	6.8	0.42	1.0	4.24	8.9	1.94	4.9	0.97	2.1	2.79	6.0
(c) Distribution costs	4.49	11.3	1.21	3.0	3.52	7.4	1.52	3.9	2.35	5.0	3.33	7.2
TOTAL						10.82	27.3	5.75	14.0	12.79	26.8	8.06	20.6	9.13	19.5	10.42	22.5
3. Margins of intermediaries :																	
(a) Merchant at assembling centre	0.69	1.7	1.19	2.9	0.64	1.4	0.51	1.3	1.04	2.2	1.01	2.2
(b) Wholesale merchant at distributing centre	1.39	3.5	1.99	4.8	1.29	2.7	1.32	3.4	1.33	2.9	1.56	3.3
(c) Retailer at distributing centre	3.87	9.8	4.34	10.6	3.84	8.0	3.56	9.1	4.38	9.4	4.25	9.2
TOTAL						5.95	15.0	7.52	18.3	5.77	12.1	5.39	13.8	6.75	14.5	6.82	14.7
4. Total value paid by the consumer						39.64	100.0	41.07	100.0	47.79	100.0	39.12	100.0	46.67	100.0	46.30	100.0

APPENDIX XXXII—*contd.*

MADRAS STATE

[illegible]

APPENDIX XXXII—concl'd.

MAHARASHTRA STATE

ORISSA STATE

Example No.	15	16	Average	17	18	19	Average
From	Sangli	Sangli		Tikkabali	Berhampur	Berhampur	
To	Bombay	Ahmedabad		Calcutta	Raipur	Cuttack	
Distance (miles)	286	592	439	470	424	29	308
Commercial quality	Rajapuri polished fingers	Rajapuri polished fingers		Berhampur un-polished fingers	Berhampur un-polished fingers	Berhampur un-polished fingers	
Actual quantity (standard maund)	10	30		61.8	30.9	33.8	

	Rs. P.	Percent- tage	Rs. P.	Percent- tage	Rs. P.	Percent- tage	Rs. P.	Percent- tage	Rs. P.	Percent- tage	Rs. P.	Percent- tage
1. Producer's net return	36.04	78.3	36.27	69.7	36.15	73.8	24.84	66.3	26.24	66.4	29.19	76.0
2. Marketing costs :												
(a) Assembling costs	1.23	2.7	2.28	4.4	1.76	3.6	2.34	6.3	1.99	5.0	1.93	5.0
(b) Transport charges from assembling centre to distrib- uting centre	2.20	4.9	3.27	6.3	2.73	5.6	1.85	4.9	2.05	5.2	0.53	1.4
(c) Distribution costs	0.67	1.4	2.45	4.7	1.56	3.2	3.01	8.0	1.45	3.7	0.25	0.7
TOTAL	4.10	9.0	8.00	15.4	6.05	12.4	7.20	19.2	5.49	13.9	2.71	7.1

3. Margins of intermediaries :																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
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NOTE—1. All costs and margins are given for one standard maund of turneric.

- Assembling costs include expenses incurred in respect of transport from village to market, market charges, grading, polishing handling, and carting to railway station, station expenses and taxes.
- Distribution costs include expenses incurred in respect of market charges, handling and other charges and taxes at distributing centre.
- All transactions relate to the period from March to July 1961.

APPENDIX XXXIII

Analysis of costs and margins in the exports of turmeric

Example No.	1	2	3	4
From	Cochin	Cochin	Erode	Karur
To	New York	Sanfransisco	Colombo	Colombo
Commercial quality	Alleppey unpolished finger	Alleppey unpolished finger	Erode polished finger	Karur polished finger
Actual quantity (standard maund)	272.2	204.9	204.2	204.2

	Rs. P.	Percent- tage	Rs. P.	Percent- tage	Rs. P.	Percent- tage	Rs. P.	Percent- age
1. Producer's net return	46.66	66.5	46.85	64.6	28.37	77.2	32.42	81.7
2. Assembling costs	5.43	7.7	6.56	9.0	4.73	12.9	3.92	9.9
3. Shipment expenses (F.O.B.)	0.74	1.0	0.73	1.0	0.51	1.4	0.64	1.6
4. Steamer freight	13.75	19.6	14.97	20.7	1.91	5.2	1.44	3.6
5. Expenses at destination (commission, weightment, etc.)	1.79	2.6	1.24	1.7	Nil	Nil	Nil	Nil
6. Exporter's margin	1.84	2.6	2.13	3.0	1.21	3.3	1.25	3.2
7. C.I.F. (destination) price	70.21	100.0	72.48	100.0	36.73	100.0	39.67	100.0

NOTE.—1. All costs and margins are given for one standard maund of turmeric.

2. Assembling costs include expenses incurred in respect of transport from village to market, market charges, grading, polishing, handling and taxes.

3. All examples relate to the period from March to July 1961.

APPENDIX XXXIV

Average costs and margins in the marketing of turmeric and average net return to the producers in different States in India (1960-61)

(Rupees per standard maund)

Particulars	Andhra	Pradesh	Maharashtra	Madras	Orissa	All-India
	Rs. P.	Percen- tage	Rs. P.	Percen- tage	Rs. P.	Percen- tage
1. Producer's net return	29.06	62.8	36.15	73.8	33.43	63.6
2. Marketing costs :						
(a) Assembling cost	4.30	9.3	1.76	3.6	4.72	9.0
(b) Transport charges from assembling centre to distributing centre	2.79	6.0	2.73	5.6	3.04	5.8
(c) Distribution cost	3.33	7.2	1.56	3.2	4.36	8.3
TOTAL	10.42	22.5	6.05	12.4	12.12	23.1
3. Margins of intermediaries :						
(a) Merchant at assembling centre	1.01	2.2	0.76	1.5	1.19	2.3
(b) Wholesaler at distributing centre	1.56	3.3	2.10	4.3	1.66	3.1
(c) Retailer at distributing centre	4.25	9.2	3.94	8.0	4.15	7.9
TOTAL	6.82	14.7	6.80	13.8	7.00	13.3
4. Price paid by the consumer	46.30	100.0	49.00	100.0	52.55	100.0
					38.47	100.0
					6.58	17.1
					6.80	14.6
					46.58	100.0

LIST OF PUBLICATIONS—*contd.*

Market- ing Series No.	Symbol No.	Name of Publication	Price
			Rs. P.
*21	AMA 18	Report on the Marketing of Coffee in India and Burma .	1·25
*22	AMA 21	Report on the Marketing of Potatoes in India and Burma .	1·25
*23	AMA 22	Report on the Marketing of Milk in India and Burma .	1·25
*24	AMA 25	Preliminary Guide to Indian Fish, Fisheries, Methods of Fishing and Curing	1·00
*25	AMA 26	Abridged edition of the Report on the Marketing of Eggs in India and Burma (in Hindi)	1·00
*26	AMA 27	Abridged edition of the Report on the Marketing of Eggs in India and Burma (in Hindi)	1·25
*27	AMA 20	Report on the Marketing of Rice in India and Burma .	1·25
*28	AMA 24	Report on the Marketing of Groundnuts in India and Burma	1·25
*29	AMA 7·40	Annual Report of the Agricultural Marketing Adviser and Summarised Reports of Senior Marketing Officers in Provinces and certain States for the year ending 31st December, 1940	1·25
*30	AMA 28	Abridged edition of the Report on the Marketing of Potatoes in India and Burma (in English)	1·25
*31	AMA 29	Abridged edition of the Report of the Marketing of Grapes in India and Burma (in English)	1·25
*32	AMA 29	Abridged edition of the Report on the Marketing of Milk in India and Burma (in English)	1·25
*33	AMA 39	Handbook on the Quality of Indian Wool	1·25
*34	AMA 38	Abridged edition of the Report on the Marketing of Tobacco in India and Burma (in English)	1·25
*35	AMA 31	Abridged edition of the Report on the Marketing of Groundnuts in India and Burma (in English)	1·25
*36	AMA 41	Report on the Marketing of Hides in India and Burma .	1·25
*37	AMA 35	Abridged edition of the Report on the Marketing of Rice in India and Burma (in English)	
*38	AMA 34	Instructions regarding Grading and Marking of Ghee in connection with Agricultural Produce Grading and Marking (Ghee) Rules, 1938	0·25
*39	AMA 23	Report on the Marketing of Sugar in India and Burma .	1·25
*40	AMA 37	Report on the Marketing of Skins in India and Burma .	1·25
*41	AMA 22·2	Second edition of the Report on the Marketing of Milk in India and Burma	1·25
*42	AMA 36	Report on the Co-operative Marketing of Agricultural Produce in India	1·25
*43	AMA 42	Report on the Marketing of Citrus Fruits in India	1·25
*44	AMA 33	Report on the Marketing of Lac in India	1·25
*45	AMA 40	Report on Fairs, Markets and Produce Exchanges in India .	1·25
*46	AMA 32	Report on the Marketing of Coconut and Coconut Products in India	1·25

LIST OF PUBLICATIONS—*contd.*

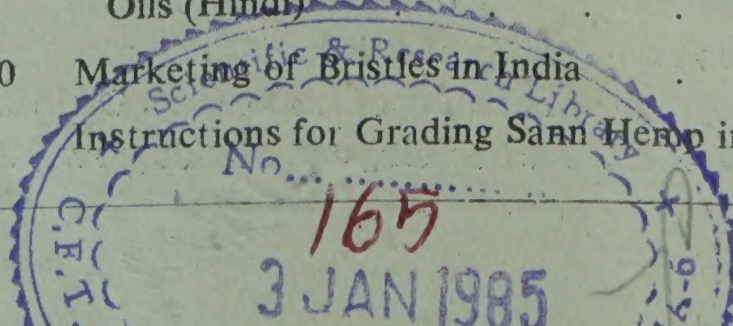
Market- ing Series No.	Symbol No.	Name of Publication	Price
			Rs. P.
*47	AMA 45	Report on the Marketing of Cashewnuts in India	1·25
*48	AMA 48	Report on the Marketing of Gram in India	1·25
*49	AMA 47	Report on the Marketing of Bananas in India	1·25
*50	AMA 4e	Report on the Marketing of Sheep and Goats in India	1·25
*51	AMA 44	Report on the Marketing of Barley in India	1·25
*52	AMA 46	Report on the Marketing of Fish in India	1·25
*53	AMA 51	Report on the Marketing of Cattle in India	1·25
*54	AMA 52	Report on the Marketing of Wool and Hair in India	1·25
*55	AMA 53	Report on the Marketing of Castorseed in India	1·25
*56	AMA 57	Agricultural Produce (Grading and Marking) Act, 1937, with Rules made prior to 31st December, 1946	1·25
*57	AMA 50	Report on the Marketing of Ghee and Other Milk Products in India	3·00
*58	AMA 55	Supplement to the Report on the Marketing of Wheat in India	1·25
59	AMA 49	Report on the Marketing of Rapeseed and Mustard in India	2·00
60	AMA 56	Report on the Marketing of Cardamom in India	1·12
61	AMA 59	Bulletin on the Marketing of Sann Hemp in India	1·50
62	AMA 54	Bulletin on the Marketing of some important Stone, Pome and Small Fruits and Pine-apples in India	1·25
63	AMA 58	Report on the Marketing of Arecanuts in India	1·25
64	AMA 60	Report on the Marketing of Milk in the Indian Union	3·50
65	AMA 46-II	Report on the Marketing of Fish in the Indian Union	5·62
66	AMA 25-II	Preliminary Guide to Indian Fish, Fisheries Methods of Fishing and Curing	4·25
67	AMA 62	Abridged edition of the Report on the Marketing of Milk in the Indian Union (in Hindi)	1·12
68	AMA 61.48	Annual Report of the Directorate of Marketing and Inspection for the year ending 31st December, 1948	1·25
69	AMA 64	Atlas on Livestock and Livestock Products	8·87
70	AMA 66	Instructions for Grading Tobacco	1·12
71	AMA 69	Report on the Marketing of Hides in India	4·50
72	AMA 68	Report on the Marketing of Sesamum and Nigerseed in India	3·50
73	AMA 73	Report on the Marketing of Groundnuts in India	7·50
74	AMA 70	Report on the Marketing of Maize and Millets in India	5·50
75	AMA 74	Report on the Marketing of Rice in India	8·00
76	AMA 75	Report on the Marketing of Tobacco in India	7·50
77	AMA 78	Report on the Marketing of Mangoes in India	10·00
78	AMA 77	Methods of Sampling and Testing Vegetable Oils and Fats under Agmark	2·25
79	AMA 79	Report on the Marketing of Meat in India	5·75
	AMA 81	Report on the Marketing of Skins in India	5·50

LIST OF PUBLICATIONS—*contd.*

Market- ing Series No.	Symbol No.	Name of Publication	Price
			Rs. P.
	AMA 85	Quality of Ghee sold loose in urban markets in India. Ghee Series I in English	0.25
	AMA 88	Ghee Series II (in English)	0.19
81	AMA 80	Methods of Sampling and Testing Butter Fat (Ghee) and Butter under Agmark	2.37
82	AMA 82	Bulletin on the Marketing of Palmyra Fibres in India	1.62
83	AMA 83	Report on the Marketing of Chillies in India	7.75
84	AMA 86	Report on the Marketing of Poultry in India	3.80
85	AMA 87	Report on the Marketing of Potatoes in India	3.00
86	AMA 89	Brochure on the Marketing of Henna in India (in English)	0.87
87	AMA 90-54	Report on the Analysis of Fruit and Vegetable Products in India	2.37
88	AMA 90	Report on the Marketing of Tapioca in India	1.62
89	AMA 91	Report on the Marketing of Linseed in India	10.50
90		Fruit Grading Instructions	
91	AMA 94.1	Report on Regulated Markets in India, Vol. I—Legislation	2.25
92	AMA 84	Report on the Marketing of Cattle in India	3.37
93	AMA 99	Report of an Ad hoc Survey of Cold Storage for Fruits and Vegetables in Consuming centres in India	0.87
94	AMA 94	Administration Report of the Directorate of Marketing and Inspection for the period 1949-1954	2.00
95	AMA 95	Ghee Series I (in Hindi)	0.31
96	AMA 96	Ghee Series II (in Hindi)	0.25
97	AMA 100	Report on the Fruits and Vegetable Murabba Industry in India	1.50
98	AMA 95-55	Administration Report of the Directorate of Marketing and Inspection for the year 1955	1.75
99	AMA 103	Brochure on the Marketing of Henna (Hindi)	0.75
100	AMA 104	Report on the Marketing of Ghee and other Milk Products in India	2.25
101	AMA 33	Report on the Marketing of Lac in India	15.00
102	AMA 101	Report on the Marketing of Pulses in India	6.50
103	AMA 105	Ata Grading Instructions	0.75
104	AMA 106	Instructions for Grading and Marking Sugarcane (Jaggery) under the Agricultural Produce (Grading and Marking) Act, 1937, and the Sugarcane Gur (Jaggery) (Grading and Marking) Rules, 1943	2.37
105	AMA 107	Instructions on Grading and Marking of Creamery Butter	2.50
106	AMA 112	Hand Book on Grading of Sann Hemp in India	2.00
107	AMA 108	Hand Book on Grading of Bristles in India	2.00
108	AMA 109	Brochure on the Marketing of Lemongrass Oil in India	3.00
109	AMA	Agricultural Produce (Grading and Marking) Act, 1937 . . . . .	..

LIST OF PUBLICATIONS—*contd.*

Market- ing Series No.	Symbol No.	Name of Publication	Price
			Rs.P.
110	AMA 93	Atlas on Marketing Aspects of Food Crops	10.00
111	AMA 110	Report on the Chutney Industry in India	3.87
112	AMA 98	Atlas on Marketing Aspects of Commercial Crops	10.00
113	AMA	A note for the guidance of parties wishing to grade Ghee under Agmark in	(Unpri- ced).
114	AMA 95.56	Administration Report of the Directorate of Marketing and Inspection for the year 1956	4.40
115	AMA 13	Report of the Marketing of Bones and Bonemeals in India	4.50
116	AMA 14	The Fruit Products Order, 1955	1.44
117	AMA 11	Brochure on Standard Methods of Wool Analysis	1.12
118	AMA 115	Instructions for Grading Lemongrass and Sandalwood Oils	2.87
119	AMA 117	Brochure on the Marketing of Myrobalans in India	2.85
120	AMA 1.20	Monograph on Types and Grades of Unmanufactured Tobacco Exported from India, 1957	3.05
121		Information Sheet No. 1 . . . . .	..
122		Standard Methods of Wool Analysis (Hindi) . . . . .	..
123	AMA 121	Report on the Marketing of Tobacco in India	11.00
124	AMA 122	Report on the Marketing of Fats and certain important By-products in India	7.75
125	AMA 125	Report on the Marketing of Arecanuts in India	9.50
126	AMA 123	Report on the Marketing of Fish in India	7.00
127	AMA 126	Brochure on the Marketing of Green Peas in India	3.70
128	AMA 127	Brochure on the Marketing of Sandalwood and its Oils	4.40
129	AMA 124	Brochure on the Marketing of Goat Hair in India	1.20
130	AMA 95.60	Administration Report of the Directorate of Marketing and Inspection for the three years ending 1959-60	5.00
131	..	Directory of Cold Storages in India	1.95
132	..	Wool Grading Instructions	(Unpri- ced).
133	AMA 129	Bulletin on the Marketing of Aloe and Sisal Fibres in India	2.95
134	AMA 95.62	Administration Report of the Directorate of Marketing and Inspection for the year 1960-61	(Unpri- ced).
135	AMA 131	Bulletin on the Marketing of Sann Hemp in India	7.75
136	AMA 115	Grading Instructions on Lemongrass and Sandalwood Oils (Hindi)	4.15
137	AMA 130	Marketing of Bristles in India	3.65
138	AMA	Instructions for Grading Sann Hemp in India . . . . .	..



LIST OF PUBLICATIONS—concl'd.

Market- ing Series No.	Symbol No.	Name of Publication	Price
			Rs. P.
BROCHURE SERIES			
		Brochure on the Marketing of Fish in India	Unpri- ced.
		Brochure on the Marketing of Wool in India	Do.
		Brochure on the Marketing of Milk in India	Do.
		A Note for the Guidance of Vegetable Oils under Agmark	Do.
		Brochure on the Marketing of Ghee under Agmark	Do.
		A Note for the Guidance of Creamery Butter under Agmark	Do.
AMA 63		Brochure on the Marketing of Fish in India	1.56
AMA 65		Brochure on the Marketing of Wool in India	1.50
AMA 72		Brochure on the Marketing of Milk in India	3.75
AMA 71		Brochure on the Marketing of Ghee in India	1.62
AMA 76		Brochure on the Grading of Tobacco in India	2.37
AMA		Report on the Marketing of Wheat in India	..
AMA		Report on the Marketing of Wool in India	..
AMA		Report on Containers used for Fruits and Vegetables in India	..

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